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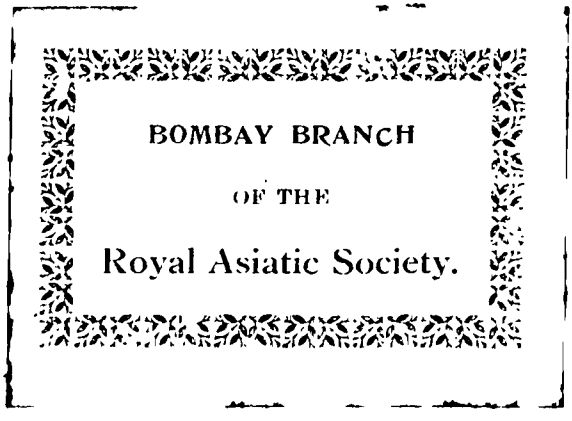

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ON SOME

DISPUTED QUESTIONS

OF

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ANCIENT GEOGRAPHY.

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BY

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WITH A MAP.

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PREFACE.

THE Dictionary of Greek and Roman Geography edited by Dr. William Smith is a work of so much utility to the study of Ancient history, and of such general importance to classical education, and the progress of knowledge, that its extensive circulation wherever the English language is spoken or read may confidently be anticipated. I lose no time, therefore, in submitting to the Editor, some "Observations" suggestive of the propriety of his reconsidering a few of the articles, with a view to a second edition of his Dictionary.

To these "Observations" I have added a Second Edition of a Paper "On the Greek Stade as a Linear Measure," which was published in 1839, in the Ninth Volume of the Journal of the Royal Geographical Society.

About the middle of the last century the great French geographer D'Anville was the first to make any successful progress in an examination of the geography of the civilized nations of antiquity. It was an arduous task, as all those countries anciently so populous, and so full of towns and cities, were comparatively in an almost deserted state. No maps had ever been made of them applicable to a comparison of the ancient and modern geography, and they were all in the hands of savage, intolerant, and *xenelasious* Turks. In such an enquiry France and Italy had an advantage over the other nations of Europe, in their sea coasts affording a ready communication with the Levant.—France, above all, in the Academies which had been established by Louis XIV. giving protection to Science, and honour to those who dedicated their time to its advancement. Among the able men whom the Academy of Inscription and Belles Lettres produced or encouraged, none was more illustrious than D'Anville, not less distinguished for his sagacity and powers of criticism, than for his diligence in the collection of geographical materials, his judgment in reducing them to forms of public utility, and his perseverance in these objects until he lost his sight at an ad-

vanced age. The Catalogue of his works comprehends 211 maps, and 78 printed memoirs or dissertations. By these labours he formed a system of ancient geography, which nothing could improve but nautical surveys, aided by an actual examination of the countries by competent persons, travelling for geographical purposes.

But D'Anville unfortunately placed too much reliance upon the geometrical capacity and attainments of the Greeks and Romans; he relied too much on the accuracy of their texts, and seems not to have been sufficiently aware of the general ignorance and negligence of the later Greek and Latin writers. In comparing his materials with the ancient authorities, he arrived at the conclusion, that there were two itinerary stades in use by the Greeks and Romans, one of which was the Olympic stade, the eighth of a Roman mile, the other shorter, and equal to a tenth of the same mile[1]. Subsequently he found himself under the necessity of imagining the former existence of other itinerary stades. The consequence of this error was, that instead of a mere corollary deduced from his geo-

[1] D'Anville, Mesures Itinéraires.

graphical materials ancient and modern, which had contributed nothing to the great results of his labours, this error became, in the hands of his *confrères* and successors in the Academy, a momentous enquiry, producing in the year 1805, in the first volume of the French translation of Strabo, some elaborate tables by Gosselin on the comparative value of six different kinds of stade, to which he added three others at the end of the fifth volume of the translation published in 1819. All that can be said in favour of such an expenditure of learning and arithmetical labour is, that if D'Anville's Corollary, and its extension by his followers, have not advanced the comparative geography of the ancient world, neither have they retarded that advancement which has been solely derived from the happy decline of the Mahometan religion and Turkish power, admitting the Christians of Western Europe to the means of obtaining a better knowledge of the true geography of those countries.

Rennell, though in his Geography of Herodotus he did not venture to disturb the D'Anvillian system of a plurality of stades, which, during half a century, had enjoyed the favour of the French Academy, and though he even believed in two

itinerary stades, justly accounts for the different lengths of the stade as deducible from the ancient authorities, by remarking that all the distances recorded by them were nothing more than computed distances. He observes that the difference of length obtained from eight of the greatest authorities was no more than a fourteenth part, and generally no more than a twenty-fourth, and that such "variations ever did and ever will arise on computed distances, examples of which," he adds, "existed on our own public roads previous to their improvement, and do yet exist on many of the cross-roads."

Both Egyptians and Greeks had the means and were in the habit of employing correct superficial measurement for the protection of landed property, and short distances may often have been accurately measured; but as they had not those facilities for measuring time which are now so common and useful to travellers among the semi-barbarians of Mahometan countries, their most accurate elements in long distances were probably nothing better than the ordinary day's sail by sea, and the ordinary day's march by land.

The French translation of Strabo was undertaken

by the order of Napoleon I., and entrusted by the Minister of the Interior to two of the most eminent Hellenists of the Royal Academy of Inscriptions, Messrs. Laporte Dutheil, and Coray (Κοραῆς, a Greek settled at Paris). On the death of M. Laporte, his place was supplied by M. Letronne. From the beginning M. Gosselin had been the geographical colleague. Of a work so produced it is a feeble commendation to say that it is the best translation of Strabo existing in any modern language. So much however has, since the years 1805 and 1819, been done to *realize* the geography of Turkey, that a new edition of the French Translation of Strabo, with such alterations or omissions in the notes as the improved geography would suggest, would be an undertaking not unworthy of the protection of Napoleon III.

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OBSERVATIONS

ON

SOME OF THE ARTICLES IN THE DICTIONARY OF GREEK AND ROMAN GEOGRAPHY BY VARIOUS WRITERS, EDITED BY WILLIAM SMITH, LL.D.

ÆGYPTUS, by W. B. D.

THE author of this article expresses doubts as to the reality of the circumnavigation of Africa, stated by Herodotus to have been accomplished by some Phœnicians in the service of Neco king of Egypt, about the year 610 B.C. "Among the greatest of the works of Neco," says W. B. D., "was the canal between the Nile and the Red Sea * * * *. At his command also the Phœnicians undertook the circumnavigation of the African peninsula. The success of the enterprise is problematical, but, as Major Rennell in his essay on the geography of Herodotus has shown, by no means impossible" (i. p. 45). In the article 'Libya,' the same writer says, with reference to the same question, "the improbability of this story is not by any means fully established" (ii. p. 177). In Dr. Smith's Dictionary of Biography under the head 'Necho,' the circumnaviga-

tion is mentioned as an accomplished fact. As other opinions might be adduced, favourable to its admission into history, particularly that of T. H. D. in the article 'Phœnicia' (ii. p. 617), and that of Grote in his History of Greece (iii. p. 381), I am tempted to offer a few observations on this question.

The perimeter of Africa is about 13,500 geographical miles, of 60 to the degree of latitude. But in estimating the number of those miles to be sailed over by the Phœnicians, a large addition must be made in consideration of the ancient custom of following the intricacies of the coast-line, a custom caused by their dread of the open sea, by the smallness of their vessels, depending more for progress upon oars than sails, and therefore numerously manned and requiring frequent landings. In the voyage of Nearchus we find mention made of the sufferings of the crew from having remained two nights on board, as well as of the delay, which was sometimes occasioned by the necessity of giving the men some repose on shore after their fatigues.

In estimating the addition to be made to the general perimeter of Africa for the coast-line, a convenient example is afforded by Strabo (p. 335), who, in a citation from Artemidorus, states that the perimeter of the Peloponnesus, not following the shore of the gulfs (μὴ κατακολπίζοντι), was 4400 stades; following the gulfs (κατακολπίζοντι) 5600 stades. The former estimate exceeds that of Polybius by 400 stades; and that Polybius is correct is proved by the latest maps of the Moréa, the general circumference of which is 400 G. M. nearly, while that of the windings of the coast at a distance of two or three miles from

the shore is about 520 G. M., agreeing nearly with the computation of Artemidorus, if we deduct from it 400 stades, or the same number by which he exceeds Polybius as to the exterior perimeter. 400 to 520 or 10 to 13 is therefore the proportion, by which we may be allowed to compute the difference between the general periphery of a great island or peninsula and its *catacolpizing* line. The 13,500 miles therefore, which are the measure of the circuit of the African peninsula, require to be augmented to about 17,500 for the length of an ancient circumnavigation of it

Herodotus, in describing that of the Phœnicians of Necho, says, "that beginning their voyage from the Red Sea, they sailed through the southern sea until the autumn, when they sowed corn in the part of Libya, at which they had arrived, and remained there until it was ripe. Having reaped the corn, they again set sail, and having thus consumed two years, in the third they turned the pillars of Hercules (the straits of Gibraltar) and proceeded to Egypt." "They asserted," adds the historian, "that which he could not believe, though others might, namely, that in sailing round Libya, they had the sun to the right hand[1]." Unfortunately Herodotus has not given us the precise time in which the circumnavigation was performed, we can only learn from him that it was less than three years. If the straits of Gibraltar were entered in the beginning of the third year, the voyage may have been completed about the middle of that year, the northern coast of Africa

[1] Herodot. 4, 42.

being already known to the Phœnicians, and in length not exceeding a sixth of the whole perimeter of Africa; but as it was more likely that the straits were not passed very early in that year, we may fairly presume that it was in the latter half of the third year that the Phœnician circumnavigators arrived at the Egyptian coast. Assuming two years and nine months or 1000 days for the whole of their circumnavigation we have still to deduct the time spent in providing their store of bread-corn, the sowing and reaping of which could not, under the most favourable circumstances, have been effected in less than two months; and this operation must have been repeated the second year, for although Rennell has not taken this second year's operation into his calculation of the delays to which the expedition was subject, it is evident from the words of Herodotus (Ὥστε δύο ἐτέων διεξελθόντων) that such at least was the supposition of the historian. There will then remain about 880 days applicable to the navigation of 17,500 geographical or nautical miles, giving a mean daily rate of about 20 miles. This seems by no means an impossible rate, when we find about 35 miles to be the usual computed day's sail of the Greeks, until we consider

1. That strong adverse winds or tempestuous weather would often prevent all progress. 2. That frequent stoppages would be required for procuring water, and every kind of provision except bread-corn. 3. That these operations would often be prevented or impeded by the hostility of natives. 4. Still more certain would be the delays occasioned by the necessity of repairing the ships from time to

time. Of all these causes of delay we find examples in the coasting voyage of Nearchus from the Indus to the Euphrates, an exploratory paraplus of the same kind as the supposed periplus of Africa in the reign of Necho, and which was performed also by Phœnicians, united to other experienced seamen from Cyprus, Greece, and Egypt. Nearchus consumed 127 days in coasting from the Indus to the Arosis, a river near the head of the Persian gulf. The outer or general line of this coast measures about 1140 G. M., which number, increased in the proportion of 13 to 10 for *catacolpization*, makes 1480 G. M. sailed over in 127 days. From these days, however, a few may be deducted as not proceeding from any of the four above-mentioned causes of delay, such as the days spent by Nearchus on the Anamis where he fell in with Alexander. If we assume 110 for the number of days actually employed on the passage, we shall find, by means of the minute examination to which the narrative of Arrian has been subjected by Dean Vincent in his "Commerce and Navigation of the Ancients," that 50 days were spent in progress and 60 in detention, and that the mean daily rate of Nearchus on the days of progress was about 30 G. M. Assuming that in the circumnavigation of Africa the days of detention would be no more than equal in number to those of progress, there would then remain 440 days for the navigation of 17,500 G. M., giving a mean rate of about 40 G. M. per diem. This result, which requires a daily rate much greater than the ordinary day's sail of the Greeks, and still greater than that which the experience of Nearchus gave in

a voyage of about 110 days, seems alone to prove the impossibility of the circumnavigation of Africa as related by Herodotus, even without considering some circumstances, tending to give not a much lower but a much higher rate to the progress of Nearchus than to that of the Phœnicians of Necho. These are—1. The four months' delay of the circumnavigators for the purpose of laying in a sea-store of grain must have occurred in the months most favourable for progress. 2. The expedition of Nearchus was undertaken about 284 years after the pretended periplus of Africa, and must therefore have had a great advantage in those improvements in practical navigation which had arisen in the interval between them. 3. Nearchus had occasional communication with the army of Alexander, and the latter part of his exploratory voyage was conducted along the coast of a civilized, friendly, and abundant country; whereas the circumnavigators of Necho must often have been thrown upon shores more destitute of all means of supplying their wants than that of the Ichthyophagi of the Indian coast, and to the hostility of savages far more formidable. 4. The voyage of Nearchus was performed throughout in the temperate climate included between the 23rd and 30th degrees of north latitude; in fact, his only serious detention by weather was owing to his having quitted the Indus too early, and having in consequence been detained by the south-westerly monsoon 24 days at no great distance from the river's mouth. The Phœnician circumnavigators, on the other hand, had to encounter the tempestuous seasons of a great variety of climates, and in particular those of the

southern extremity of Africa, the rounding of which by ancient navigators must have required many months.

Rennell, in endeavouring to prove the possibility of the circumnavigation, insists upon the benefit which the Phœnicians might have derived from the monsoons on the eastern, and the trade-winds on the western side of Africa, and has pointed out the manner in which that benefit would accrue; we have still to consider, however, that in the catacolpic navigation of the ancients, a prevailing wind might be fair at a certain distance from the coast, but made adverse by the windings of that coast, and prove an obstinate impediment to the doubling of some of the promontories.

If the experiment of circumnavigating Africa had ever been successfully tried, one cannot conceive that it should have been so entirely forgotten in Egypt, that the geographers of Ptolemaic and subsequent times were not agreed in opinion whether Africa was or was not a peninsula. It matters little what was believed by such Latin writers as Cornelius Nepos, or Pomponius Mela, or by Pliny, who says not only that Africa had been circumnavigated by the Phœnicians of Necho from the east, but also in the opposite direction by Hanno the Carthaginian, though we know from the journal of Hanno that he never reached beyond, or at least far beyond, Serra Leona on the western coast of Africa. One of the most learned of the Greeks, Eudoxus, the friend of Plato, could not have placed any confidence in the story of Herodotus, when, instead of referring to it, he supposed that Africa had been circumnavigated by

Hanno, beginning from the Red Sea. Eratosthenes and Strabo, though persuaded that Africa was a peninsula, appear to have been ignorant of any practical proof of the fact, and consequently must have disbelieved the report of Herodotus. The judicious and inquiring Polybius, who had himself been employed on a voyage of discovery on the western coast of Africa, expressly states that it never had been ascertained whether Libya was surrounded by the sea[2]. Finally, Ptolemy, whose work comprehends every thing that was known of Africa in the Greek and Imperial times of Egypt, and whose information has of late years been verified in some remarkable instances, denied the junction of the Atlantic and Indian seas, and must therefore have believed that Africa was not a peninsula[3].

As to the sun having been seen, as Herodotus informs us, on the right hand of the navigators in sailing round Africa, that is to say, in the northern portion of the heavens, the Egyptians could hardly have been ignorant that such a phænomenon would be the consequence of a prolonged southern course, a part of Egypt itself having been within the tropic. This part of the story, therefore, the only part which Herodotus could not believe, was an easy and natural addition, if we suppose the whole to have been a fiction, like so many others which Herodotus received from the Egyptian priests.

[2] Plin. 5, 1; Polyb. iii. 38. 59.

[3] On the whole of this question and the cited authorities, see Rennell, Geography of Herodotus, cc. 24, 25; Gosselin, Recherches sur le tour de l'Afrique.

ÆLANA, by the EDITOR.

The Editor remarks that "Ælana was situated 10 miles east of Petra (Euseb. Onom. s. v. Ἠλάθ), and 150 miles S.E. of Gaza (Plin. 5, 11)," and that "the site is now occupied by a fortress called Akaba, in which a garrison is stationed, because it lies on the route of the Egyptian pilgrims to Mecca." But the ancient description of the position of Ælana is not correct. Akaba is 60 G. M. south-westward of Petra, and 120 G. M. due south of Gaza.

APAMEIA PHRYGIÆ, by G. L.

G. L. is not correct in saying that "Arundell was the first who clearly saw that Apameia must be at Denair." The same is shown in my Asia Minor (p. 158), which was published ten years before the journey of Arundell. Arundell was the first who visited and described the place after Pococke.

APOLLONIA, by the EDITOR.

The Editor, in reference to four cities of this name, which were frequently confounded, namely those of Mygdonia, Chalcidice, Acte of Athos, and Thrace, remarks that they "are correctly distinguished by Leake, who errs however in making the passage of Athenæus, l. 8, c. 3, p. 334 e, refer to No. 6 (Políghero) instead of to No. 5 (Póllina). (Northern Greece, vol. iii. p. 457.)"

I cannot assent to this correction. The words of Athenæus are . . . . τὴν Βολύκην λίμνην, περὶ ἧς Ἡγή-

σανδρος ἐν τοῖς ὑπομνήμασί φησιν οὕτως· [Ἀπολλωνίαν] τὴν Χαλκιδικὴν δύο ποταμοὶ ῥέουσιν, Ἀμμίτης καὶ Ὀλυνθιακός· ἐμβάλλουσι δὲ ἀμφότεροι εἰς τὴν Βολύκην λίμνην. Bolyce was the name of the lake or lagoon at the head of the Toronaic gulf, near which Olynthus was situated. Βολύκη λίμνη means indeed lake of Olynthus, B being a common Macedonian prefix. Apollonia Mygdoniæ, the No. 5 of the Editor, was situated to the north of the range which separated Mygdonia from Chalcidice. It preserves its ancient name, and stands, as he justly observes, on the great road from Thessalonica to Amphipolis. In the article Bolbe by the same writer, he says that the Ammites and Olynthiacus were streams falling into the lake Bolbe. It is evident that he believed Bolbe and Bolyce to have been one and the same lake instead of having been 25 G. M. apart. *Vide* Travels in Northern Greece, iii. p. 155.

ARGOS ORESTICUM, by the EDITOR.

"Leake confounds the Macedonian Argos with Argos Oresticum." The reasons given by the Editor for this opinion are, 1. That Stephanus mentions an Argos in Macedonia as well as Argos Oresticum. 2. That the same Stephanus on the authority of Hecatæus describes the Orestæ as a people of Epirus (Μολοσσικὸν ἔθνος). 3. That Strabo also places the Orestæ in Epirus. 4. That Ptolemy distinguishes the Epirote from the Macedonian Orestis. But the text of Strabo when interpreted by an autopsia of the countries in question, leaves no doubt that the Orestæ, whose capital was called Argos, were one

of the tribes of upper Macedonia bordering north-westward upon those of Illyria, and south-westward upon the Epirotic tribes (τὰ Ἠπειρωτικὰ ἔθνη), among whom the Orestæ were reckoned until they were subdued by the kings of Macedonia together with the Lyncestæ, Pelagones and Elymiotæ, and with these constituted the country called upper Macedonia (ἡ ἄνω Μακεδονία). We find Argos named together with Stobi and Pelagonia among the cities of the second Macedonia as late as the tenth century (Const. Porphyrog. de Them.). Under such circumstances it is not surprising that the Orestæ should have been attributed sometimes to Epirus and sometimes to Macedonia. The supposed mention by Stephanus of an "Argos in Macedonia as well as Argos Oresticum" arises from an obvious error in the text of Stephanus, in voce Ἄργος, where he enumerates the cities of this name, and where instead of ἐβδόμη κατὰ Μακεδονίαν· ὀγδόη Ἄργος Ὀρεστικὸν, ἢ ἐν Σκυθίᾳ, we ought to read ἐβδόμη Ἄργος Ὀρεστικὸν κατὰ Μακεδονίαν, ὀγδόη, ἡ ἐν Σκυθίᾳ. As to the double mention of Orestis in Ptolemy's chapter on Macedonia, it cannot refer to two different districts, as in both instances Amantia is named as the only town. It is clearly an erroneous repetition in the text of Ptolemy. There can be no doubt as to the position of Amantia in the valley of the Celydnus near the Acroceraunian mountains and the Ionian gulf (Tr. in N. Greece, i. p. 375). Its being placed in Macedonia by Ptolemy is accounted for by Strabo, who says (p. 326), Ἔνιοι δὲ καὶ σύμπασαν τὴν μέχρι Κορκύρας Μακεδονίαν προσαγορεύουσιν. How the district of Amantia, which is a part of Chaonia in

Epirus, obtained the name of Orestis, there are no means of explaining. Possibly this people disputed with the Orestæ of upper Macedonia as to their connexion with the mythus of Orestes, though the name, Amantia, is by no means favourable to such a claim, having been derived from the Abantes of Eubœa, by whom Amantia was colonized.

ACARNANIA, ASTACUS, by the EDITOR.

The latter article asserts that "There was no town Crithote, but only a promontory of that name," and that "Leake has misunderstood the passage of Strabo in which Crithote is mentioned." This opinion is supported by that of a German writer, who says that the word πολίχνη in Strabo refers to Crithote in the Thracian Chersonese. The words of Strabo (p. 459) are Εἶτα ἄκρα Κριθωτὴ καὶ αἱ Ἐχινάδες, καὶ πόλις Ἀστακὸς, ὁμώνυμος τῇ περὶ Νικομήδειαν καὶ τὸν Ἀστακηνὸν κόλπον, ἐνικῶς λεγομένη· καὶ ἡ Κριθωτὴ δ' ὁμώνυμος πολίχνη τῶν ἐν τῇ Θρακίᾳ Χερρονήσῳ· πάντα δ' εὐλίμενα τὰ μεταξύ· εἶτ' Οἰνιάδαι καὶ ὁ Ἀχελῶος. This is one of the many passages in Strabo which cannot be securely explained, but by an actual examination of the country. I have placed Astacus at Platyá because here appears to have stood the most important of the towns between Alyzia (Kandili) and Œniadæ (Trikardhó-kastro); at Platyá alone there is a port such as the following words of Scylax seem to require. Μετὰ ταῦτα πόλις Ἀλύζεια καὶ κατὰ ταύτην νῆσος Κάρνος (Kálamo) καὶ πόλις Ἀστακὸς καὶ ποταμὸς Ἀχελῶος καὶ Οἰνειάδαι πόλις.

The ruins which the Editor supposes to be those

of Astacus, and to which I have given the name Crithote, have no port, but stand above an open bay; nor have they the appearance of having belonged to a polis such as Astacus, though perfectly suited to a πολίχνη. Finding therefore a ruin to which no other name could be assigned, I supposed that in this instance, as in many others in Greece, the πολίχνη, the mountain, and the cape at its termination all bore the same name, Crithote. I am still of opinion therefore that Strabo, who like Scylax proceeds from north to south, meant to say, "Then occur Cape Crithote, and the Echinades, and the city Astacus, homonymous with that near Nicomedeia . . . . There is also a small town Crithote, homonymous with one of the towns in the Thracian Chersonese. Next (after Astacus) occur Œniadæ and the Achelous."

ASTYRA, by G. L.

The position of Astyra in the territory of Abydos may perhaps be ascertained by some remaining vestiges of its gold mines which were conspicuous in the time of Strabo, and from which mines the riches of Priam are said to have been derived: ὁ δὲ Πριάμου (πλοῦτος) ἐκ τῶν ἐν Ἀστύροις περὶ Ἄβυδον χρυσείων, ὧν καὶ νῦν ἔτι μικρὰ λείπεται· πολλὴ δ' ἡ ἐκβόλη καὶ τὸ ὀρύγματα, σημεῖα τῆς πάλαι μεταλλείας, Strabo, p. 680. The position of another Astyra near Adramyttium, celebrated for its temple of Artemis Astyrene, is correctly stated by G. L. There can be little question as to the accuracy of Pausanias in describing the hot sources of a

third Astyra in the district of Atarneus opposite to the hot sources in Mytilene, so precise is his description of them, and himself having been a native of the not very distant Magnesia. There was a fourth Astyra in the district of Phœnice, in the Peræa Rhodiorum (Confer Strabo, p. 651—Stephan. in Ἄστυρα). Of this city coins are extant bearing the Rhodian type of Apollo. Their having been found in Rhodes led to the erroneous belief that there was a city named Astyra in that island.

ATHENÆ, by the Editor.

A celebrated Prussian archæologist remarks, that "in Germany, beyond the professional men of education, a smaller number reads learned historical works than in England;" but that "a never-resting machinery is at work, exciting an immense number of incompetent writers and young men to make themselves a reputation by doubting whatever has been said before them." (Bunsen, in "Life and Letters of Niebuhr," p. xii.) *Untravelled* German scholars of high attainments are sometimes liable to a similar imputation; nor are our own great historians of Greece free from that of having bestowed too much attention and placed too much reliance on German authorities in preference to those of England, without reflecting that English geographers are generally αὐτόπται, while the Germans are seldom more than speculators upon English information. Mr. Grote, as well as the Editor of the Dictionary of Greek and Roman Geography,

has adopted that new theory of Athenian topography which includes a considerable portion of the falls of Hymettus within the eastern walls of the city, and places Phalerum at Trispýrghi on the eastern promontory of the Phaleric bay. Without the strongest monumental evidence, which in this case is totally wanting, I find it impossible to assent to either of these bold innovations. But upon this question it is unnecessary for me to enlarge, as a refutation of them has been undertaken by an eminent geographer, one of the most learned of the contributors to Dr. Smith's elaborate and most useful compilation.

BARGASA, by G. L.

"Leake places Bargasa in his map by conjecture at the head of the gulf (Sinus Ceramicus), at a place which he marks Djovata." The "conjecture" is confirmed by the Admiralty Survey (1604). At Port Djova (so named by Capt. Graves), immediately above the mouth of the river Kadin to the northward, are Hellenic remains and sepulchres, sufficient to fix the site of Bargasa. On the same northern coast of the same gulf, Capt. Graves found considerable remains of the city Ceramus, which gave name to the gulf. Both Ceramus and Bargasa possessed autonomous mints; the legend on the coins of the former is ΚΕΡΑΜΙΗΠΟΛΙΤΩΝ, of the latter ΒΑΡΓΑΣΗΝΩΝ. These were the only two ancient sites observed by Capt. Graves on the shore of the Ceramic gulf.

BARGYLIA, by G. L.

Nothing more than the general outline of the coast between Miletus and Caunus was known, and that most incorrectly, until the publication by the Admiralty of the surveys of Captains Graves and Brock, from whose labours we learn the positions of the principal maritime cities, of none of which, except Halicarnassus and Cnidus, had there been previously any certain accounts. Those distinguished geographers have determined beyond question the sites of Bargasa, Ceramus, Myndus, Caryanda, and Bargylia. In the Admiralty Chart numbered 1531, Captain Graves has furnished us with a plan of the extant remains of Bargylia, consisting of the vestiges of town walls, within which are remains of a temple, two theatres, still almost complete, and outside the walls the ruins of other constructions, among which are a stadium and numerous tombs, with those of a causeway leading over the narrow inlet of the sea, on the western side of which Bargylia stood.

CAUNUS, by G. L.

By means of an inscription copied by Mr. Hoskyn, R. N., Caunus is proved to have stood at a small village named Paleáni, on the right bank of the emissary of the lake of Kiui-gez, so called from a village at the head of it. The ruins of Caunus consist of town walls, some of a very ancient style of masonry, a theatre with thirty-four rows of seats, situated on the slope of the hill of the Acropolis,

with "ruins of baths, temples, and an aqueduct" (Journal of the R. Geographical Society, xii. p. 143, and Mr. Hoskyn's map). Caunus thus ascertained leaves no doubt that the great bay of Karagatsh was Port Panormus of the Caunii, and that the Talamon Tshai is the river Calbis or Indus.

CERAMEICUS (Sinus), by G. L.

The means of correcting and enlarging this article will be found in the beautiful work of Captain Graves, the Admiralty Chart, No. 1604, one of the most interesting of the geographical discoveries made under the administration of Sir Francis Beaufort.

CNIDUS, by G. L.

This article, though copious and carefully composed, might receive some interesting additions from the chapter on Cnidus in the third volume of the Antiquities of Ionia (folio, 2nd edition) published by the Society of Dilettanti.

COSA in ETRURIA (Ansedonia), by E. H. B.

COSA in GALLIA (Coz between Thoulouse and Cahors), by G. L.

There was a third Cosa (not in the dictionary) in Thracian Macedonia, but of which the exact position is not yet ascertained. It is described by Stephanus, who writes the name Κοσσέα, and describes it as a Θρᾴκης πολίχνιον. Its didrachma of gold inscribed ΚΟΣΩΝ are not very uncommon in

that country. Their types and style lead to the belief that they were struck in haste for the use of the Roman army by M. J. Brutus, when in possession of the gold mines of Mount Pangæum prior to the battle of Philippi in B. C. 42. Cosa was probably not far from Philippi, and the head-quarters perhaps of Brutus. *Vide* Numismata Hellenica, Europe, p. 42.

CREMASTE, by G. L.

From the name and the mention by Xenophon of a plain near Cremaste, this place might, as well as Astyra, be looked for in the heights above Abydus, and here, perhaps, some remains of the ὀρύγματα, σημεῖα τῆς πάλαι μεταλλείας, which existed in the time of Strabo, may still be visible, as at the ancient mines of Attica and of the Macedonian Chalcidice. The whole range along the Asiatic side of the Dardanelles was probably auriferous, for besides the testimony of Pliny (37, 11) and Polyænus (2, 1, § 26) as to the gold mines of Lampsacus, it is remarkable that of all the three cities which occupied this tract of country, namely, Dardanus, Abydus, and Lampsacus, gold coins are extant; and of no others in the Troad. Cyzicus, which is not very distant from Lampsacus, has also gold coins.

CYLLENE, HYRMINE, by the EDITOR.

The latter of these two Homeric cities I suppose to have occupied the site of Khlemutzi or Kastro Tornese, a ruined castle, standing in the centre of

the conspicuous promontory at the western extremity of the Peloponnesus, which seems to have derived its ancient name Chelonatas from its resemblance at a distance to a tortoise (Tr. in Morèa, ii. p. 176). The Editor on the contrary, following apparently Dr. Curtius, places Cyllene midway between the Capes Papa and Glarentza amidst the lagoons and pine-woods which now occupy that shore, and where a harbour, if it ever existed, must have been an artificial basin now obliterated. Hyrmine he places at Kunupéli, a small rocky projection on the same shore, to the northward of his proposed site of Cyllene, where, among remains of different ages, are those of a Hellenic fortress. To arrive at this conclusion, he is obliged to substitute XV M. P. for the II M. P. or V M. P. of Pliny (3, 16) as the distance between Cyllene and Chelonatas, and to suppose that at so late a time as the commencement of the Christian æra the Peneius, which now joins the sea to the southward of the peninsula of Chelonatas, discharged itself to the northward of that peninsula. The authorities favourable to this hypothesis are, 1. Ptolemy, whose names occur in the following order—Dyme, Araxus extrema Eleæ, Cyllene navale, Penei fluvii ostia, Chelonatas promontorium, Chelonatas sinus, Ichthys extrema, Alphei fluvii ostia; 2. The Tabular Itinerary, in which XIV M. P. is the distance from Dyme to Cyllene, and XIV also that from Cyllene to Elis. But such evidence cannot be admitted as of much weight against that of Strabo, assisted by an actual examination of the places, even when the text of Strabo, defective as it often is, may require some correction. That

it does stand in need of correction in the passages relating to Cyllene and the Peneius cannot be questioned, as the text is at variance with itself. Strabo remarks (p. 337) that Araxus, the northern promontory of the Eleia, was 60 stades distant from Dyme of Achaia. Araxus he considered the beginning of the Eleian paralia, beyond which, in proceeding westward (more correctly SS.W.), occurred Cyllene the port (*ἐπίνειον*) of the Eleians, from which there was a distance of 120 stades to the city Elis. He then remarks that the words of Homer, Ὦτον Κυλλήνιον, *ἄρχον* Ἐπειῶν, referred to this Cyllene, which he describes as a middle-sized town (*κώμη μετρία*), containing an ivory statue by Colotes wonderful to behold, but no longer to be found apparently at Cyllene in the time of Pausanias. The text of Strabo then proceeds as follows: *Μετὰ δὲ Κυλλήνην ἀκρωτήριόν ἐστιν ὁ Χελωνάτας, δυσμικώτατον τῆς Πελοποννήσου σημεῖον· Προκεῖται δ' αὐτοῦ νησίον καὶ βράχεα ἐν τοῖς μεθορίοις τῆς τε κοίλης Ἤλιδος καὶ τῆς τῶν Πισατῶν, ὅθεν εἰς Κεφαλληνίαν πλέοντι εἰσὶ στάδιοι ὀγδοήκοντα. Αὐτοῦ δέ που καὶ ὁ Ἑλίσσων ῥεῖ ποταμὸς ἐν τῇ λεχθείσῃ μεθορίᾳ. Μεταξὺ δὲ τοῦ Χελωνάτα καὶ τῆς Κυλλήνης ὅ τε Πηνειὸς ἐκδίδωσι ποταμὸς καὶ ὁ Σελλήεις ὑπὸ τοῦ ποιητοῦ λεγόμενος, ῥέων ἐκ τῆς Φολόης· ἐφ' ᾧ Ἔφυρα πόλις, ἑτέρα τῆς Θεσπρωτικῆς, καὶ τῆς Θετταλικῆς καὶ τῆς Κορίνθου, τετάρτη τις ἐπὶ τῇ ὁδῷ κειμένη τῇ ἐπὶ θάλατταν, ἤτοι ἡ αὐτὴ οὖσα τῇ Βοινῷ (τὴν γὰρ Οἰνόην οὕτω καλεῖν εἰώθασιν) ἢ πλησίον ἐκείνης, διέχουσα τῆς Ἠλείων πόλεως σταδίους ἑκατὸν εἴκοσι.* This passage evidently cannot be right as it stands, because after remarking that next to Cyllene occurs the promontory Chelonatas, which is identified with Cape Tornese as being the

westernmost point of the Peloponnesus, and as having a small island before it, Strabo is made in his text to assert that between Cyllene and Cape Chelonatas, *two* rivers join the sea, the Peneius and the Selleeis, whereas there is but one considerable river between the Capes Araxus and Ichthys, namely, the Peneius. I proposed therefore (Tr. in Moréa, i. p. 7) the following corrected reading of the words Μεταξὺ, &c. "Μετὰ τὸν Χελωνάταν καὶ τὴν Κυλλήνην ὅ τε Πηνειὸς ἐκδίδωσι ποταμὸς ὁ καὶ Σελλήεις ὑπὸ τοῦ ποιητοῦ λεγόμενος, ῥέων ἐκ τῆς Φολόης· ἐφ' ᾧ Ἔφυρα πόλις." With this emendation Strabo will be found consistent with the real topography, on the supposition that Cyllene occupied the site of Glarentza, which we have sufficient reason for presuming, as it is the only harbour on the whole coast between Araxus and Ichthys, and the ordinary place of communication from the Moréa to the islands of Zante and Cefalonia, and as it still preserves some ruins of the same kind as those existing on the site of Elis, the distance moreover between the two places agreeing with that given by Strabo and confirmed by Pausanias. The number of stades assigned by the text of Strabo to the interval between Cape Chelonatas and Cephallenia, namely 80, is manifestly erroneous; the shortest distance between the two shores being 18 geographical miles, or 180 stades, so that the latter is perhaps the number of stades we ought to read instead of 80. The distance between Cape Chelonatas and Cyllene in Pliny, namely, II M. P. or V M. P. (the MSS. differing), is tolerably correct in either case, measuring the shorter distance in a direct line and the longer by the line of coast. The

sequel of the passage in Strabo, ἐπὶ τῇ ὁδῷ κειμένη τῇ ἐπὶ θάλατταν, is incapable of correction without some auxiliary evidence as to the position of Œnoe (Æolicè Bœnoa); for this place could not have been both upon the river Peneius and at the distance of 120 stades from Elis towards the sea, the ruins of that city being not more than 80 stades distant from the mouth of the river. As to the Selleeis, this name meaning river of the Selli or Hellenes, and having been given in the time of Homer to other rivers of Greece, which were afterwards known by other names, there can be little doubt that in the present instance it was the Homeric name of the Peneius, there being no more than one considerable stream in the Eleian plain. This river, however, being composed of two nearly equal branches, it is not unlikely that in this as in other instances, occurring in all countries, the name of either branch may at times have prevailed as that of the united river,—that in the time of Homer the southern branch, afterwards the Ladon, may have been considered the principal one, and called the Selleeis as well above as below the junction of the upper Peneius. The argument which the Editor derives from the order of names in Ptolemy, in opposition to the placing of Cyllene at Glarentza, can only be met by the supposition of a textual error in Ptolemy, and that instead of Araxus, Cyllene, Penei fluvii ostia, Chelonatas promontorium, we ought to read Cyllene, Chelonatas promontorium, Penei fluvii ostia. This at least is easier than to remove the course and mouth of the river from the southern to the northern side of the peninsula of Chelonatas, to which there is an

insurmountable objection in the terrestrial levels, indicated by the course of the streams flowing into the Cyllenian bay. All these water-courses have their origin in a ridge which follows the right bank of the Peneius, and is connected with the eastern foot of the peninsula of Chelonatas, a proof of which may be seen in the French map of the Moréa, where a rivulet is marked which flows into the Cyllenian bay exactly at the north-eastern angle of the peninsula. If the Peneius ever flowed into the Cyllenian bay, it must have been long before the historic ages.

CYNURIA, CYPHANTA, ASTRUM, PRASIÆ, by the EDITOR.

The only difficulty as to Thyrea, the chief town of Cynuria, is the distance of 10 stades from the sea, assigned to it in the text of Thucydides, the real distance of the ruins of Luku from the shore being about 30 stades. But even in Thucydides faulty distances are found to occur, either in consequence of his defective information or of errors in his text. I continue to believe that Thyrea stood at Luku, that Astrum was its fortified λίμην, that the frontier between the districts of Thyrea and Prasiæ, or, in other words, between Argeia and Laconia, was at the lake or marsh of Mostó and its discharge into the sea; that Cyphanta was at Lenidhi, Anthene at Ellinikó, and Eva at or near Plátano. It is unnecessary to repeat the arguments in support of these conclusions, which are to be found in Travels in the Moréa, ii. pp. 485, 492, and in Peloponne-

siaca, p. 294 seq. I need only observe, that the Editor has misunderstood me when he says that I supposed the Hellenic wall at Astró to be the one commenced by the Æginetans in the eighth year of the Peloponnesian war, and which they were prevented from completing by the sudden advent of the Athenians. I stated only that it was the "situation" of that unfinished work, which was doubtless of a temporary kind, leaving no vestiges to the present time. The Hellenic walls still existing are remains of a permanent fortress which protected the harbour of the Thyreatæ, such as was customary in almost every Greek state where the city was at some distance from the coast. The Editor throws doubts upon the antiquity of the name Ἀστρόν, where a town has arisen since the beginning of the war of Greek independence, by saying, "it is supposed that the place has retained its name from antiquity." There can be no doubt that the name is as old as the time of Ptolemy, in whose text it occurs, according to its present position. When I visited Astró there was no town there; it was merely a commercial port and *dogana*, giving name to the wide bay on which it stands (Tr. in Moréa, ii. p. 482). As to Prasiæ, the Editor states that the ruins at St. Andrew which I have attributed to Prasiæ "must be those of a city not mentioned by any ancient writer," and that "Prasiæ ought probably to be placed further south at Tyró" (Cynuria, i. p. 727). This opinion is repeated under the article 'Prasiæ' (ii. p. 668), where the Editor adds that Tyró is the position assigned to Prasiæ by Boblaye, Ross, and Curtius. But, as I have already remarked in Peloponnesiaca

(p. 295), Tyró is an ancient name, showing that here stood the Τύρος τῆς Λακωνικῆς noticed by Stephanus. Tyró, moreover, is less than half the distance stated by Pausanias to have been that which existed between Cyphanta and Prasiæ, namely 200 stades, while the real distance of 16 geographical miles between the site of Cyphanta at Lenidhi and that of Prasiæ at St. Andrew is sufficiently near the truth to corroborate the other evidence, especially when we consider that computed distances are more commonly in excess than in defect.

CYTHERA, by the Editor.

The Editor remarks that there is "no satisfactory explanation" of the apparent contradiction between Thucydides and Pausanias as to the position of the cities Scandeia and Cythera. Perhaps he had not seen that which I have proposed in the Transactions of the Royal Society of Literature (vol. iv. 8vo, p. 260). Old Cythera, founded by the Phœnicians (the ἄνω πόλις of Thucydides), still exists in the shape of a few remains at Paleópoli, distant, as the historian states, about 30 stades from the κάτω πόλις, which stood at the harbour now called Avlémona, and which in the time of Xenophon was named Phœnicus, in allusion to the founders of the city Cythera (Hellenica, 4, 8). The distance of the modern town of Cerigo from its port Kapsáli accords equally well with that which Pausanias has assigned to the interval between the city Cythera and its harbour, namely 10 stades. There can be no doubt, therefore, that Paleópoli above Avlémona was the city Cythera of the time

of Thucydides, nor any question that the modern Cerigo, which stands on the site of an acropolis of an ancient city, was the city Cythera of the time of Pausanias. It seems equally certain that this was the ἡ ἐπὶ θαλάσσῃ πόλις Σκάνδεια of Thucydides, for though the words ἐπὶ θαλάσσῃ do not exactly accord with the 10 stades which Pausanias places between Cythera and its port, it is easy to believe that in the course of the six centuries which elapsed between the times of Thucydides and Pausanias, the town which had stretched from the acropolis, now the town of Cerigo, to the sea at Kapsáli, had gradually been removed, for the sake of security from piracy, to the heights on the eastern side of the acropolis or modern town, where many vestiges of antiquity have been found on a site called, like that at the old or Phœnician Cythera, Paleópoli. The change, therefore, which had occurred in the long interval of time just mentioned was this—the old Phœnician foundation had been abandoned, and Scandeia having become the only town in the island, had changed its name to Cythera, as in all the other islands of the Ægæan, which have but one town. Meantime the old name Scandeia continued to be attached to the old maritime site now the harbour Kapsáli.

HYSIÆ of the ARGEIA, by the EDITOR.

The Editor, having said that the ruins of Hysiæ stand on an isolated hill above the plain of Akhladhókambo, adds, "They consist of the remains of an acropolis, which escaped the notice of Leake." On a reference to my Travels in the Moréa, ii. p.

337, the following passage will be found. "March 13. This morning at 12 minutes beyond the village (Akhladhókambo), on the right of the road to Argos, I observe some remains of Hysiæ. The town occupied a height, on which now stands a church of the Panaghía. The summit is naturally defended towards the plain by a brow of cliffs; in the opposite direction there is a small hollow between the hill and the slope of Mount Paravunáki. Here the fields are covered with broken pottery. I find as I ride over the ground a weight for spinning and some other trifles of antiquity. *Some pieces of wall of the second order are traced round the summit.*" These are remains of the acropolis.

ILIUM, by L. S.

L. S. is of opinion that "Old and New Ilium occupied the same site," in other words, that there never was any other Ilium than that of which vestiges still remain at the distance of about three miles from the sea between the villages of Kum-kiui and Tchiblak, and of which city we have coins inscribed ΙΛΙΕΩΝ. The consequence of thus placing the Troy of Homer is, that the Ghiumbrek river was the Simoeis, and that the Scamander was the river which, rising in the highest and most distant summit of Ida, is now called the Mendére. The stream, therefore, which rises at those fountains under Bunárbashi, so well corresponding to the description of the sources of the Scamander by Homer, remains without an ancient name. L. S. relies upon "the popular belief among the people of New Ilium," that their city

stood on the site of the Homeric Troy. But in what city, either ancient or modern, are there not pretensions relating to their monuments or localities of the most doubtful authenticity or manifestly false? In Greece nothing was more common, and we often find even the credulous Pausanias questioning the tales of the ἐξηγηταί, as he must have done also at New Ilium if he visited that city, the Ilienses having pretended that their Minerva was the identical statue of the time of Priam, which Homer (Z. 92) shows to have been a seated figure, whereas that of New Ilium was standing, as Strabo remarks (p. 601) and as the coins of Ilium confirm. When five or six centuries had elapsed from the time of the destruction of Troy; when its true position had become an archæological inquiry among the learned of the Troad itself, it would be absurd to suppose that the people of New Ilium could have allowed of any doubt as to the identity of their site with that of the Homeric city. Neither Xerxes, nor Alexander, nor Augustus was likely to waste his time on the question, but would be satisfied with the guidance of the native authorities. All that Herodotus tells us as to Xerxes is that he sacrificed to Minerva in Pergamus, the ancient acropolis of Priam; but if New Ilium, as would seem from Strabo (p. 601), was in existence at that time, the people would of course identify their acropolis with the Pergamus as well as their statue with the Pallas of Priam; since they pretended, as we learn from the same author (p. 600), that the ancient city had never been completely desolate (οὐδ' ἐξελείφθη οὐδέποτε). The object of Alexander was to inspire among his soldiers the

belief that he was under the protection of Minerva, and it was enough for him to find at New Ilium a temple of Minerva Iliensis, from which he borrowed the armour of the goddess to carry with him into battle. Still less would Augustus, φιλόμηρος καὶ φιλαλέξανδρος ὤν (Strabo, p. 594), endeavouring to rival Alexander, and anxious to honour the country from which his own house traced its origin, have thought of questioning the claims of New Ilium to be identical with the Troy of Priam. L. S. asserts that "no ancient author of Greece or Rome ever doubted the identity of Old and New Ilium until the time of Demetrius of Scepsis and Strabo, who adopted his views." So far is this from being correct, that it would be more true to assert that all antiquity agreed in believing that the Troy of Priam had been utterly destroyed, and remained a desolate and uninhabited site. Strabo (p. 599) says that no vestige of the ancient city was to be seen (οὐδὲν δ' ἴχνος σώζεται τῆς ἀρχαίας πόλεως), and adduces the four famous lines, Ἔσσεται ἦμαρ . . . . δεκατῷ ἐναυτῷ, and other passages in the Iliad and Odyssey, which prove the ἀφανισμὸς of Troy in the time of Homer himself. Later authorities, he remarks, are agreed as to this fact, and he instances the orator Lycurgus, who says, "Who has not heard that Troy has remained uninhabited since it was destroyed by the Greeks?" (Τίς οὐκ ἀκήκοεν, ὡς ἅπαξ ὑπὸ Ἑλλήνων κατεσκάφη, ἀοίκητον οὖσαν;) The "fuit Ilium" of Virgil shows clearly what was the opinion of the learned on this question in the Augustan age. At a later time Pausanias, mentioning Troy in similar terms, ascribes its "utter destruction" to the vengeance of the gods for the conduct of Paris to

Menelaus (ἐς τελέαν δὲ ἀπώλειαν ὤλισθον Ἴλιον μὲν διὰ τὴν ἐς Μενέλαον ὕβριν τοῦ Ἀλεξάνδρου, 10, 33).

It was not until after the time of Alexander, when Greek literature became extensively cultivated in Asia Minor, and when, in the island of Lesbus and some of the cities around the Trojan district, as Parium, Scepsis, Lampsacus, and Alexandria Troas, schools of rhetoric and philosophy arose, that the identity of New Ilium with the Troy of Homer became a subject of inquiry. A learned lady of Alexandria, named Hestiæa, was the first, as far as we know, who questioned the claim of the Ilienses. She found the same difficulty in acceding to it which is so obvious to modern travellers, namely, the insufficiency of the space between Ilium and the sea for the transactions described in the poem, and she made the further important remark that the breadth of the plain had been increased since the time of the siege by the earth deposited by the rivers (πρόσχωμα τῶν ποταμῶν ὕστερον γεγονός). But the most formidable enemy of the Iliensian pretensions was Demetrius of Scepsis, the most eminent archæologist of his time, and the predecessor of Strabo, who cites him, by about two centuries. Though Strabo himself gives no decided opinion as to the site of the Homeric Ilium, a question which both he and Demetrius seem to have found unanswerable, he remarks that it was generally supposed (νομίζεται) by those who dissented from the claim of New Ilium, that Troy stood at the κώμη Ἰλιέων, 30 stades above Ilium, now Paleo Aktshi Kieui, where vestiges of antiquity are still apparent. The cause of their uncertainty we may, without much hesitation, deduce

from the following description of the plain of Troy by Demetrius, as reported by Strabo. "Ida," he says, "throws out two branches or elbows (ἀγκῶνας) towards the sea, the one to Rhœteium, the other to Sigeium, making together a half-circular figure, and ending in the plain at the same distance from the sea as New Ilium. This town," he adds, "stands between the termination of the two elbows, the ancient city having stood between their beginning; they comprehended the Simoeisian plain, through which the Simoeis flows, and the Scamandrian, through which flows the Scamander. This is the Trojan plain (Τρωϊκον πεδίον) where the Poet's battles were fought. The rivers are the Scamander and the Simoeis, the former flowing towards Sigeium (τῷ Σιγείῳ πλησιάσας), the other to Rhœteium. They unite in front of the present Ilium, and, proceeding to Sigeium, there form the lake called the Stomalimne." The Trojan plain, its rivers, and the situation of Troy at Bunárbashi are here so clearly described, that the question naturally arises, How happens it that Demetrius has taken no notice of those copious springs which now give name to Bunárbashi, which accord so well with Homer's description of the Scamandrian sources, which are the only remarkable sources in the Trojan plains, and which are, indeed, the most convincing evidence of the identity of the ancient site? The answer must be, that the Scamander of Demetrius was not the Scamander of Homer. The former was the river now called Mendére, evidently the Turkish form of Scamander. This river, as we are informed by Strabo, following Demetrius, had its origin in Mount Cotylus, the same distant summit of the Idæan range

which gave rise to the rivers Æsepus and Granicus, flowing north-eastward to the Propontis. In the higher part of its course it separated Cebrene from the territory of Scepsis, which occupied the upper valley of the Æsepus. Mount Cotylus is thus identified with the summit which rises immediately above the inner extremity of the Adramyttian Gulf, and here it was, therefore, that Demetrius searched for the two Scamandrian sources, and found no more than one. But this was not the worst of his difficulties. He must have been sadly puzzled at finding the Scamander of his time flowing through the Simoeisian plain, which, following the Homeric topography, he had identified with the eastern portion of the Trojan plain. Modern critics, even those willing to recognise the site of Troy at Bunárbashi, have found this difficulty insurmountable. But it will not appear so to the experienced geographer, and I shall here briefly repeat the solution of it, which I offered in my "Journal of a Tour in Asia Minor," published so long ago as the year 1824.

When a river formed of two branches has an extended course below the junction, a third name is often attached to the united stream; but when the course below the junction is short, it generally bears the name of the branch which from any cause is the more important of the two. At the time of the Trojan war this was the western branch, notwithstanding the shortness of its entire course, because its sources were under the walls of Troy, flowing in a permanent stream, and not an occasional torrent, for the most part dry in summer, like the eastern river. Although all the great Grecian rivers were deified,

those with a permanent current were held in the highest veneration, however short their course may have been, and hence the united stream below the junction of the two branches and between that junction and the bay of Sigeium was in the time of the Trojan war called Scamander, not Simoeis. When Troy had ceased to exist, when a diminished population had produced a less careful cultivation with a neglect of drainage in the Trojan plain, the alluvium of the eastern river gradually cut off the communication between the eastern and western streams, and caused the formation of marshes on the western side of the plain, from which at some unknown time, but apparently before that of Pliny, a canal was made draining the marsh into the Ægæan between Sigeium and Achæium, and thus carrying off the greater part of the waters of the Homeric Scamander into the Ægæan, while the remainder were almost entirely lost in the marshy tract on the western side of the Trojan plain, or that part distinguished by Demetrius as the Scamandrian plain; and thus there remained only one considerable river in the Trojan plain, which towards the sea had never had any other name than Scamander, a name which continued to be illustrious by its connexion with the history of Troy. No wonder, then, that this name should be transferred to the whole course of the then single river in the Trojan plain, not only up to the site of Troy, but along its entire upward course through the valley of Cebrene to its origin in Mount Cotylus, and that the less illustrious name Simoeis should have become obsolete.

There remains another remark of L. S. open to

criticism. "In the Iliad," he says, "we must bear in mind that we have to do with an entirely legendary story, which is little concerned with geographical accuracy." It would be more correct, perhaps, to say that a legendary story is more or less deserving of confidence as a historical document in proportion to its conformity with geographical accuracy. If by a legendary story is meant a poetical narrative of real events, transmitted by oral tradition or collected from prior legendary documents and embellished by the story-teller, the Iliad cannot be any thing else, for there never has been a poetical legend not founded in reality. Poetry was invented to preserve the memory of past occurrences, serving also among the Greeks to impress upon the mind maxims of morality and doctrines of religion. Lyrical hymns in honour of their deities, and epical narratives of the deeds of their heroes, must have existed before the time of the Trojan war, for it must have required centuries of advancing civilization to have brought the language and poetry of Greece, which in their progress were simultaneous or rather identical, to the perfection in which we find them in the Iliad. We have proofs of the cultivation of poetry in those early ages, and of the respect and encouragement shown to its professors, in the mention made by Homer of the bards residing at the courts of Phæacia and Sparta. In all countries in an incipient state of literature and civilization, or where these are repressed by dominant barbarism, and where the art of writing is unknown or possessed only by a few, memorials of past events or of heroic exploits, rendered fascinating to the

hearers by an artificial phraseology and the harmony of verse, have been in common use. It is the ordinary march of history and poetry in a particular state of society. Such still continue to be the lays of the Servians. Thus also in modern Greece the songs and narrative poems in the Romaic Greek dialect, which had its origin in the middle ages, have continued to be read or sung to an illiterate audience in the more sequestered parts of Greece and Southern Albania up to the present time. Two manuscript poems of this kind, which I met with in Greece, "The Description of Mani" and "The Life of Alý Pasha," are described in Travels in the Moréa, i. p. 332, and in Travels in Northern Greece, i. p. 463. These are precisely such documents as might serve as materials to a Homer of the Greek insurrection, ignorant of the rest of the world and of any language but the Romaic.

The knowledge of Grecian geography which Homer has evinced in the Catalogue can only be accounted for, in an age so remote from the birth of geographical science, by his intimate personal experience of the countries. Not less remarkable, in the same sense, is his language descriptive of the various features of Greece, and the well-adapted epithets which he attaches to the rivers and to many of the cities and their sites. These are all monumental evidences of the reality of the Trojan war and of the value of the Iliad as a historical document, not less than the remains of the treasuries of the Atridæ at Mycenæ in Argolis, and at Pharis in Laconia, and of that of the Minyæ at Orchomenus, that wealthy city which with the neighbouring Aspledon, sent

30 ships to Troy, while the other 29 cities of Bœotia sent no more than 50. It is not until we arrive at the actions of the heroes and the interference of the deities, that we tread upon ground which of necessity is the creation of the poet, founded probably upon earlier legends. The Catalogue is not only correctly geographical, but it contains also a political sketch of the state of Greece in the 12th century B.C., when the balance of power between the several nations or races of the heroic period was put an end to by the wealth and power of the Atridæ, who, provoked by the insult of Paris, formed an alliance with the principal chieftains of Æolic race to make war upon the Dardanian Greeks of Asia. As soon as we admit this to have been a real event, and the Catalogue to have been an enumeration of the forces collected on the occasion, the inconsistencies imputed to the Iliad become interesting particulars of history. Karl Otfried Müller, one of the most distinguished opponents of the Catalogue, objects to the admission of such a poor and inland people as the Arcadians into this naval enterprise; but when we read in the Catalogue that Agamemnon supplied them with ships, nothing is more likely than that they should have joined the armament, as they were his nearest neighbours and of the Æolic or Pelasgic race. Cos and the islands between it and Rhodes were another difficulty to Müller, but requiring no other explanation than that these islands partook at that time of the prosperity of Rhodes, and, having a sufficiency of naval means, volunteered to join the expedition, in which they looked probably for some advantage to themselves.

In such a country as Greece, consisting in every part of separate πολιτεῖαι, a variety of circumstances, such as party dissensions, a want of ships, and in many instances, perhaps, a prudent disapprobation of such a distant and hazardous enterprise, may have determined the States to keep their warriors at home. Among those which failed to join the armament were seven cities, described by the Poet as situated near the sea at the extremity of Pylus (πᾶσαι δ' ἐγγὺς ἁλὸς νέαται Πύλου ἡμαθόεντος), and which were all identified by Strabo as situated on or near the gulf afterwards called the Messenian. Separated from the rest of Greece, and completely in the power of Nestor and Menelaus, they formed a convenient peace-offering from Agamemnon to Achilles, though it is not surprising that Achilles should have refused it, the places being so distant from his own patrimony, even if he had had no other reasons. Some of these cities, however, sent warriors, though not ships, to Troy, as we may infer from the death of the two sons of Diocles, slain by Æneias, the same Diocles who was ruler of Pheræ (now Kalamáta), one of the seven cities, and who afterwards entertained Telemachus in his way from Pylus to Sparta. In like manner, though no more than nine cities of Crete are named by the Poet, others of its hundred cities contributed to the expedition. Thus also, as we learn from the Catalogue, some of the Epirotes of the coast opposite to Ithaca joined the squadron of Ulysses. Mr. Mure, who in the chapters on Homer in his Critical History of the Literature of Greece has most ably vindicated the Poet, and cleared his immortal

works from the doubts and difficulties raised against it by the German *mind*, has adverted to some other anomalies (as they have been called by Müller) of minor importance, and justly describes them as self-explaining anomalies, giving evidence of a genuine origin, better, indeed, than if the Poet had arrested the current of his poetry to explain them himself.

Mr. Mure truly remarks, in reference to the Catalogue, that "both historical and internal evidence are clearly in favour of its connexion from the remotest period with the remainder of the work." I cannot agree with him, however, in believing "that not a few of the proper names in the Catalogue are altogether fictitious." When were they falsified? Thucydides had the same Catalogue before him when, assuming the *round* number 1200 for that of the ships of the armament (the exact sum of the several contingents being 1186), and when striking a medium between the ships of Bœotia which contained 120 men, and those of Philoctetes which carried 50, he concludes that the amount of the forces, which according to this mode of reckoning must have been about 100,000, was not too great to have been contributed by so large a portion of Greece as Homer described. Strabo found the names in the Catalogue exactly as we now have them, and recognised almost all the sites, though "some of the cities," he says, "had entirely disappeared, some had left traces only, and some had changed their names." But the sum total of these exceptions amounts to no great number. In Bœotia, where he expected to find the Nissa of Homer, he found a city named Pharæ; and of this city coins struck in the 5th century B. C. are

still extant, thus confirming the correctness of his criticism. Such a change of name in the course of ages is something very different from falsification. In a single instance Strabo seems to have thought that one of the verses might be spurious, and altered by Solon or Peisistratus, that verse, namely, which states that the ships of Ajax stood by the *phalanges* of the Athenians; and it must be confessed that the line for which the Megarenses asserted that it had been substituted, and which named four towns in the Megaris as having contributed to the 12 ships of Ajax, has very much the appearance of being the true reading. Between eighteen and nineteen centuries after the time of Strabo I found no more difficulty than he did in identifying the Homeric sites; in Bœotia in particular, the province in which the greatest number of names occurs, there were no more than three out of the 29 of which I was unable to ascertain the exact position, and even of these three the whereabouts was not doubtful. In the dominions of Diomed and the Atridæ the proportion was still smaller: the uncertain are most numerous in Elis and the dominions of Nestor. I humbly conceive that these verifications of the Catalogue afford better proofs of the truth of the Trojan war, and of the historical value of the Iliad, than any of the objections in a contrary sense which have been raised against them by the hypercriticism and "too much learning" of the German school; for geography and chronology united form the only true basis of history. One of the objections made to the Catalogue is, that while there are names of 29 Bœotian cities, Athens alone is named in Attica,

although both districts sent the same number of ships, 50. But the twelve townships of Attica had been absorbed by Athens before the time of the Trojan war, and had become κώμαι. The political constitution of Bœotia was, moreover, totally different from that of Attica, consisting of a confederacy of small towns governed by a supreme council and a Bœotarch, in which condition it remained, notwithstanding the predominance of Thebes, to a late time, as proved by extant inscriptions. This difference of political constitution will account also for Bœotia having contained as many cities contributing ships to the armament as the three states ruled by Diomed, Agamemnon, and Menelaus, though the former sent no more than 50 ships and the latter 240. Bœotia contained at that time no such large cities as Argos, Mycenæ, and Corinth; and some of the subordinate towns of the Peloponnesus, not named by Homer, were probably as large as those of Bœotia. Another imputed anomaly is that of the Magnesians who were led to Troy in 40 ships by Prothous, but of whom no city whatever is named by the Poet, who merely says that the Magnesians dwelt about the river Peneius and Mount Pelion. But this anomaly has been explained by Strabo, who remarks that the Poet had already named many towns near Peneius and Mount Pelion the ships of which were led by Eumelus, by Philoctetes, and by Eurypylus. It appears, therefore, that the Magnesians under Prothous dwelt in various parts of the wide tract of country adjacent to the Peneius and Mount Pelion, that in proceeding to Troy they separated themselves from the Ephyri, Phlegyæ, and other races of the

same district, and that thus they formed a distinct squadron.

The only feature of the Catalogue to which some doubts of accuracy may reasonably attach is that of the numerical strength of the armaments and the *round* numbers of the ships in all but three instances, namely, those of Ajax, of Ulysses, and of the Perrhæbi. Thucydides, indeed, hints that Homer as a poet was likely to make as high an estimate as possible (ἐπὶ τὸ μεῖζον κοσμῆσαι), but the historian cannot have supposed the exaggeration to have been very great, his calculation pointing to about 100,000, which he did not think an excessive number for the extent of country which sent it forth. The round numbers, therefore, were probably not far from the truth, and even under some reduction they will prove the advances which Greece had made as a naval power during the three generations which had lived since Minos had suppressed piracy in that most piratical of all seas, though the navies of Greece in the Trojan war were still in their infancy compared with their state in the time of Thucydides himself, the ships being still without decks, and resembling piratical cruisers (Thucyd. 1, 10, Fynes Clinton, F. Hell. iii. p. 71).

Those who regard the Homeric history of the Trojan war as an incredible fable, lay great stress upon the opinion of Herodotus, who could not conceive it possible that if Helen had been at Troy, the king, his family, and subjects would have incurred utter destruction rather than restore her to the Greeks. But wars seldom afford examples of wisdom and prudence, and the testimony of Homer is

infinitely to be preferred to that of the Egyptian priests who told Herodotus that Helen was in Egypt at the time of the Trojan war. We now know how slender the reliance to be placed upon the information which Herodotus derived from that source. What records, indeed, are they likely to have had concerning the residence of a Greek woman in Egypt 700 years before the time of Herodotus? And, after all, is there any thing so incredible in the fact that a handsome young prince from a court, represented by Homer as quite Asiatic in its laxity of morals, should have violated the laws of honour and hospitality, and seduced the wife of his Laconian host to elope with him to Troy, or that the Atridæ should have been anxious to avenge the injury, or that the ambition of conquest, so often generated by wealth and power, should have been excited among them by the occasion, or that they should have persuaded the Æolic chieftains of the Peloponnesus, Bœotia, and Thessaly to join them in the enterprise? Still less wonderful is it that the advantages of a defensive war on their own ground should have enabled the weaker and less warlike power to protract the contest for several years, or that a distant expedition should have been attended or followed with as much calamity to the assailants as to the conquered. The war of Troy caused the decline of the Achaian and Æolic races, and the rise of the Dorian. It required three or four centuries to restore Greece to the prosperity and populousness which she lost by the effects of the war, but which again occurred in the 8th century B. C., when those advantages were better employed in spreading the

civilization of Greece over Sicily and Southern Italy.

The more the Iliad is impartially examined, the stronger will be the conviction that it was the work of one great and comprehensive mind. At the same time it is equally evident that Homer was much indebted to antecedent poets, and highly probable that he had recited portions of his work long before he reduced it to the form of a single great poem. Poetical memorials of the war, and legends in honour of its hĕ́roes, had been composed in various parts of Greece both before and after the fall of Troy; before, if we may judge from those lines of the Iliad which represent Achilles as touching the lyre and singing the illustrious deeds of men (κλέα ἀνδρῶν); after the war, from the description given by Homer of the poets at the courts of Phæacia and Sparta, and in the service of the suitors of Penelope. It seems no more than reasonable to believe that this kind of poetry could not have been long in an improving state before it was committed to writing. Letters had been employed long before the Trojan war in Egypt, in Phœnicia, Judæa, and Assyria; the Pelasgi had brought with them some kind of written character into Thessaly; the Phœnicians had made settlements on the coasts and in the islands of Greece, and engraved dedications on tripods had been deposited in the temples of Thebes[1]. Although the leading men of the heroic age may have been no better scholars than the majority of oriental chiefs of every grade at the present day, the poets would

[1] Herodot. 5, 59; Pausan. 9, 10.

assuredly not neglect the use of an invention so useful to them as letters. Indeed, there seems little difference between not employing such an invention when introduced, and not introducing it all. Nor is it easy to understand how the Homeric language could, without a written orthography, have been brought and kept to that degree of perfection, consistency, and precision which is found in the Iliad.

One of the most remarkable peculiarities of the Homeric Greek is the close resemblance of its grammatical forms to those of the Sanskrit, a fact leading at once to the conjecture that the Pelasgi possessed a cultivated written language, with a grammar, similar to the Sanskrit. From what part of the East the Pelasgi came there are no means of determining, but from the East they must have come, every country to the north and west of Greece having been in a more semibarbarous state than Greece itself. We are told by Herodotus that the Pelasgi taught the worship of the gods by invocations and sacrifices; and this agrees with the name Pelasgiotis, which continued to the time of the Roman empire to be attached to a portion of the Ἄργος Πελασγικὸν of Homer, or that naturally favoured country on the western and southern sides of the mountain which was the reputed abode of the Gods as well as the Muses, until disturbed, perhaps, by the Thessali and other barbarous tribes from the north and west, the worship of Jupiter was transferred or extended from Dodona of Olympus[5] to Dodona of Epirus, and that of the Muses from the eastern side of Olympus, then considered a

[5] Il. B. 750.

part of Thrace, to Mount Helicon in Bœotia. Thus there appears a great probability that the Greeks were indebted to the Pelasgi for the first improvements both of their literature and of their religious system, as we find both the one and the other developed and recorded in the Iliad. Proceeding westward the Pelasgi introduced letters into Middle Italy and Etruria, together with that military architecture of which we find so many examples in Italy as well as in Greece. However obscure may be the early history of Greek literature, and however untraceable the progress of its advancement during the ages preceding and immediately following the Trojan war, we are furnished at once in the Iliad with a monumental evidence in proof of the fact that the language, as early as 900 or 1000 years before the Christian æra, had reached a degree of perfection which was never afterwards exceeded; the former date resting upon the opinion of Herodotus, the latter upon that of the more critical and judicious Aristotle, and shown to be the preferable date by our own great chronologer Fynes Clinton. It was but natural that Thessaly and Bœotia should have been the parts of Greece where the institutions and arts of Greece were first promoted, those provinces in their productiveness and power of supporting population bearing the same relation to the rest of Greece as Egypt and Mesopotamia to the surrounding countries of Asia and Africa.

As Homer has left us nothing biographical of himself, it is from his works alone, compared with those of Hesiod, that any reliable conjectures can be formed on this subject. Hesiod says of himself that he had

never made any longer voyage by sea than across the channel of Eubœa. His father, he adds, was a citizen of the Asiatic Cyme, who migrated to Bœotia, where he dwelt in Ascra at the foot of Mount Helicon (Hesiod, Op. et Dies, 631, 648). Cyme was founded about 1033 B. C. by Æolians from Thessaly and Bœotia, and partly from Eubœa, as appears from the fact that one of the towns of that island gave name to the new city in Asia. It seems not unlikely that the father of Hesiod was descended from one of the Bœotian colonizers of Cyme, and in migrating into Bœotia returned into the original native country of his ancestors. The similarity in versification and dialect of the poetry of Homer and Hesiod leave no doubt that they are of the same Bœotian school. At that time there was no other cultivated dialect of the Greek language, or if that of Athens was then in a state of advancement to its final grammatical rules, the Athenians must have taken their models from Bœotia.

When we consider the scrupulous care with which Homer names every one of the 29 small cities of Bœotia, equal in number to those of the combined squadrons of Agamemnon, Menelaus, and Diomed, and that he places Bœotia at the head of his Catalogue, although the five Bœotian leaders were by no means among the most distinguished of the Greeks, three of them having been slain by the Trojans, we can hardly deny the probability that Homer was a Bœotian by birth, or descended from a Bœotian, or had passed a great part of his life in that country. According to the legend of Homer, ascribed to Herodotus, and of his time perhaps, though not by

him, Homer's grandfather was a Thessalian of Magnesia, who had been one of the original colonists of Cyme. In this case Homer was equally of Æolian descent, and not an Ionian, as the Ionians pretended. The same legend adds that he was born at Smyrna; and this may account, perhaps, for the Ionian claim, though it will not justify that claim, as, although occupied by the Ionians in a later age, Smyrna at the time of the birth of Homer was an Æolian city, and long afterwards, if Aristotle is correct in making that birth coeval with the commencement of the Ionian migration or soon after the year 1000 B. C. There is little probability, however, that Homer passed much of his life at Smyrna; his profession of ἀοιδός was of a migratory nature, like that of all minstrels, singers, players, and story-tellers. Every where the wandering bard was well received and liberally rewarded. The Catalogue affords proof of Homer's intimate knowledge not only of the geography of European Greece, but also of that of Thrace and the north-western parts of Asia Minor, from the river Axius westward as far eastward as Amastris and Cromna on the southern shore of the Euxine. It seems likely, therefore, that after his extensive travels, Homer returned to his native Asiatic Æolis with sufficient wealth to enable him to devote his time without any other serious care to the construction and completion of his poems, separate parts of which he had probably sung to an admiring audience in various parts of the countries which he had visited. Where his two great works were completed we have no means of forming an opinion, but there seems some reason for believing

that Chios was his ultimate retreat. When the Ionian states had risen to great wealth and power, as well as to eminence in literature, it is not surprising that they should have been anxious to make the world believe that Homer was an Ionian; and in this they so well succeeded that even at the present day the favourers of the Ionian pretension form probably a large majority. These however will look in vain for any evidence of the truth of their opinions in the Homeric poems; for while Homer makes mention of the Carian city Miletus, of Mount Mycale, of the rivers Mæander in Caria and Xanthus in Lycia, he names not a single Ionian city. Nor could the Ionians have supported their cause by any resemblance of their dialect to that of the Homeric and Hesiodic poems. The only Greek dialect that could have been in a cultivated state at the time of the Ionic migration was that of Attica, which the Ionians are supposed to have brought with them into Asia; but it would be difficult to find any great similarity between the Homeric dialect and the Ionic of Herodotus.

On the question of the site of Troy itself I have nothing to add to the reasons brought forward in my "Tour in Asia Minor" in support of the opinion, that if the plain between Bunárbashi and Kum-kale be the Τρωϊκον πεδίον, Troy must have stood at Bunárbashi. One of the arguments which have been advanced against this conclusion is the absence of all vestiges of an ancient city in that position. This, if it were true, would not be surprising, as the place is too conveniently situated to have been spared from the common fate of Hellenic cities from the

time of Troy to the present day, namely, that of being employed as materials for the construction of new buildings in the surrounding country. We are told by Strabo (p. 599) that the materials of the Trojan walls were applied by the Mytilenæans to the building of Sigeium, and that they served also for the repairs of the surrounding cities, which had been greatly damaged though not destroyed by the war. The total absence of all vestiges of ancient Troy is, however, a mistake. Although I cannot myself boast of having seen any such remains, probably because, satisfied that the springs of Bunárbashi were the Scamandrian sources and, when combined with the obvious *Hellenism* of the site, a sufficient evidence of the identity of Troy, I was not sufficiently diligent in searching for artificial vestiges. Other travellers, however, have observed walls; the latest is Captain Spratt, R.N., who surveyed the Troad by order of the Admiralty, and found not only the remains of walls, but a few letters of an inscription which have very much the appearance of having belonged to an alphabet derived from the Phœnician, and resembling the Greek, like the alphabets of Lycia, Pamphylia, and Phrygia, in short, of having belonged to the alphabet of the north-western angle of Asia Minor. These letters, and a specimen of the walls which Captain Spratt observed, have been or will be given to the public among the charts of the Hydrographical Office. In a letter which I have recently received from Captain Spratt, he says, "These and other fragments (of walls) which I saw on the heights above Bunárbashi convinced me that a great city had once stood there. That city could have been no other

than Troy." But in fact I have never met with a traveller who, having had but a tithe of Captain Spratt's experience in the geography of Greece and in the peculiarities of Hellenic sites, had not arrived at the same conclusion as to Bunárbashi, unless it be one of those young men of Germany alluded to by the Chevalier Bunsen, "who make a reputation by doubting whatever has been said before them," and whose object is not so much truth as a *disputatio* and a display of erudition with the view to a professorship. A dissertation on the Trojan question, by one of these learned Germans, has been published in the second volume (8vo) of the Royal Society of Literature,—the same writer who propounded a new theory on the ports of Athens, placing Phalerum on the eastern side of the Phaleric bay: the plan of Athens drawn on this hypothesis has been adopted by Mr. Grote.

LEBADEIA, by E. B. J.

E. B. J. adopts the opinion of Ulrichs that the ἄλσος or sacred grove of Trophonius was on the left or western bank of the river, and the town on the eastern or right bank, the reverse being the conclusion arrived at in Travels in Northern Greece, ii. p. 127. Although the passage relating to it in Pausanias (9, 39) is defective, we are all agreed in believing that his intended meaning could have been no other than that the river Hercyna separated the city of Lebadeia from the Alsos. E. B. J. repeats my description of the sources of the Hercyna, and justly remarks that those of the left or western side are in-

significant compared with those on the right or eastern side, but without adding a fact which I have mentioned, and which seems to leave no doubt that these latter were the reputed sources of the Hercyna, namely, that when I was at Lebadeia in the month of July the western sources were dry as well as the χείμαῤῥος or torrent on either side of which the sources emerge, while the fountains on the eastern side flowed with a steady stream. This alone seems decisive as to the situation of the Alsos, since it is evident from the description of Pausanias that the Alsos was immediately adjacent to the source called that of the Hercyna, which anciently emerged in a contiguous cavern, though now issuing below that cavern, a change sufficiently accounted for by the effects of alluvion in the course of ages. With these facts before him, I am surprised that E. B. J. should have favoured the opinion of Ulrichs, that the Alsos of Trophonius was on the western side of the river, for no other reason apparently than because on the eastern side may be observed some remains of Hellenic antiquity indicating, as he supposes, that there stood the city. To me, however, these remains seem rather to confirm the position of the Alsos on the eastern side of the river, for in and behind the Alsos stood all the principal sacred edifices of the Lebadeians. Within the Alsos were the temples of Trophonius and Ceres, and on the adjacent mountain those of Jupiter Βασιλεὺς, Apollo, and Cronus. All these buildings were extant as late as the time of Pausanias, and it is much more likely their vestiges should remain to the present day than those of any public building in the

town, where a succession of renovations or repairs cannot have left any thing very ancient in its original position above ground. Pausanias, however, has not made mention of any public building in Lebadeia, though he describes it as a handsome and flourishing city (*κεκόσμηται μὲν δὴ τὰ ἄλλα σφίσιν ἡ πόλις ὁμοίως τοῖς Ἑλλήνων μάλιστα εὐδαίμοσι*), a condition in which there were at that time very few of the cities of Greece. Some, if not all, the inscriptions found in the modern town were obviously brought from the Alsos, where the disappearance of the sacred buildings, leaving only a few vestiges, is doubtless to be accounted for by their having served during a long succession of ages as building materials for the modern town. Mr. Mure (i. p. 236) cannot understand upon what principle I infer from the words of Pausanias, *ἐπὶ τοῦ ὄρους*, that the *μαντεῖον* or oracular adytum of Trophonius was situated at the foot of the hill. My answer is, that I translate *ἐπὶ τοῦ ὄρους* not *on* but *at* the mountain, as we find *ἐπὶ* with the second case often employed, for example in the Anabasis of Xenophon (4, 3, § 28), where *ἐπὶ τοῦ ποταμοῦ* evidently means "at the river" or on the bank of the river. Philostratus (Apol. Tyan. c. 19) thus describes the situation of the oracular adytum: *Τὸ δ' ἐν Λεβαδείᾳ στόμιον ἀνάκειται μὲν Τροφωνίῳ τῷ Ἀπόλλωνος, ἐσβατὸν μόνοις τοῖς ὑπὲρ χρησμῶν φοιτῶσιν· ὁρᾶται δ' οὐκ ἐν τῷ ἱερῷ, μικρὸν δ' ἄνω τοῦ ἱεροῦ ἐν γηλόφῳ.* Comparing this evidence with that of Pausanias, who says, after speaking of the Alsos and its temples, *ἀναβᾶσι δὲ ἐπὶ τὸ μαντεῖον καὶ αὐτόθεν ἰοῦσιν ἐς τὸ πρόσω τοῦ ὄρους Κόρης ἐστὶ καλουμένη θήρα καὶ Διὸς βασιλέως ναός*, it seems clear that the descent into

the μαντεῖον or oracular cavern was between the Alsos and the mountain, and that on the mountain was the hunting-place of Proserpine and the temples of Jupiter Basileus, Apollo, and Cronus. The γήλοφος or hill of the oracular cavern must therefore have been at the foot of the ὄρος, the space between the river and the mountain not admitting of any other position. This question of the situation of the Hierum of Trophonius is the more interesting as this is one of the sites where excavations can hardly fail of being rewarded by discoveries interesting to archæology, whenever Greece shall recover from the impoverished state in which she has been left by enemies and pretended friends.

MARATHON, by the Editor.

The Editor observes that "the exact ground occupied by the Greek and Persian armies can only be a matter of conjecture. Colonel Leake, whose account is both probable and consistent, though Mr. Finlay differs from him, supposes that the Athenian camp was in the valley of Vraná near its opening into the plain," &c. (see Transactions of the Royal Society of Literature, i. part 2, 4to. p. 165, 'Athens and the Demi,' ii. p. 77.)

Mr. Finlay has become so weighty an authority on questions of this kind by his long residence at Athens, and by the distinguished position in the world of letters which he has assumed as a historian of Greece and the Lower Empire, that it is incumbent upon me either to assent to his views on the battle of Marathon or to state the

grounds on which I still retain my original opinions. Mr. Finlay confirms, by adopting in every essential particular, the truth of the comparative geography of the Marathonian Tetrapolis as I have laid it down. It appears to me that the placing of the demus Marathon at Vraná is the key to the narrative of Herodotus, requiring nothing more for its elucidation than the supposition that the Athenians marched from Athens by the way of Cephesia to Marathon, crossing by the modern route the ridges which lay between those two demi. Arrived in the vale of Vraná, their position would naturally be across the vale, their flanks being secured by the rugged hills on either side from the chief object of their reasonable fears, the Persian cavalry. The route just mentioned was the shortest from Athens to Marathon, the safest from hostile interruption, and which led directly into the best of all the positions in the Tetrapolis for so small an army as that of the Athenians and Platæans. Mr. Finlay, on the contrary, supposed that the Greeks marched from Athens through the demi of Pallene and Gargettus towards the south-eastern extremity of Mount Brilessus, from whence they followed some narrow valleys not far from the sea-shore, until they arrived in the demus Probalinthus in the Marathonian Tetrapolis. Here Mr. Finlay places the camp of the Athenians along the foot of Mount Argalíki, with their right not far from the sea, and their left at the entrance of the valley of Vraná. On the day of battle he supposes the two armies, with equal fronts and a vacant space of a mile between them, to have occupied the whole plain between Mount Kotróni

and the Marathonian bay as far north-eastward as the right bank of the river Charadrus. The space between its left bank and the marsh he supposes to have been occupied by the Persian camp. But is it likely that the Athenians, ignorant as they must have been of the extent to which the enemy had occupied the Paralia and Mesogæa, should have preferred the longer though easier and more level road into the Marathonia to the shorter and more secure? Still less likely is it that they should have drawn up their army with their right near the bay, which was occupied by the enemy's fleet. In reference to that part of the narrative of Herodotus which states that the Persians were defeated in either wing, but that they forced the weak Athenian centre to retreat, Mr. Finlay interprets the words διώκουν ἐς τὴν μεσόγαιαν to mean that the Athenians retreated into the Attic district called the Mesogæa, that is to say, either by the same route by which they came or over Mount Argalíki. But such an interpretation on which the question greatly depends is scarcely admissible, or must at least be submitted to the decision of the learned. In the mean time we may observe that ἐς τὴν μεσόγαιαν or ἐν τῇ μεσογαίᾳ are common forms for "into" or "in the interior country," and are thus employed by Herodotus himself on other occasions. Assuredly, therefore, if he had intended the Attic district Mesogæa in this instance, he would have written ἐς τὴν Μεσόγαιαν καλεομένην.

MARGANEÆ, PYLUS of ELEIA, by the EDITOR.

The Editor remarks that the site of Marganeæ "is uncertain, but was probably to the east of Letrini. Leake," he adds, "places it too far north at the junction of the Ladon and the Peneius, which is in all probability the site of the Eleian Pylus." I cannot subscribe to either of these judgments of the Editor. We must admit that the ancient geography of the Eleia, including the Pisatis, as derived from the remains of antiquity still extant, compared with the evidence of Strabo and Pausanias or with the incidental mention of the places in history, is not so satisfactory as to admit of the allotment of many of the names to the extant vestiges with any great degree of confidence. But this can hardly be said of the Eleian Pylus, which is described by Pausanias as situated on the upper road from Olympia to Elis at a distance of 80 stades from the latter. We find, accordingly, near Kuloglí, in that part of the valley of the Ladon where the upper road would naturally follow the valley, the ruins which I have supposed to be those of Pylus. They are chiefly on the left bank of the river near the point where the road may be supposed to have turned out of the valley to cross the heights in a right line to Elis, following nearly the modern route. In the year B.C. 364 the Eleians, according to Xenophon, having marched out of Elis against Pylus, met the Pylii returning from an unsuccessful expedition against Thalamæ, a town in the adjacent mountains, and not only completely defeated them, but followed up

the victory by taking both Pylus and Marganeæ. It is likely, therefore, that both these places were to the eastward of Elis, at no great distance from one another. *Marganeæ* may be placed at Agrápidho-khori consistently with the narrative of Xenophon, but equally well perhaps in some part of the country to the eastward of *Pylus*, a part of the country which has not been sufficiently explored, but which from the authorities cited in Travels in the Moréa, chapter xvi., seems evidently to have been the ancient Amphidolia, where the only city named besides Amphidoli was Marganeæ, written in our copies of Strabo Margalæ. On either supposition as to the site of Marganeæ, it was much more to the northward than to the eastward of the Letrinæa. The arguments of the Editor in favour of placing *Pylus* at Agrápidho-khori are derived from the words of Strabo (p. 339), Μεταξὺ δὲ τῆς τοῦ Πηνειοῦ καὶ τοῦ Σελλήεντος ἐκβολῆς (the Editor proposes to read ἐμβολῆς) Πύλος ᾠκεῖτο κατὰ τὸν Σκόλλιν, and from those of Pausanias, Παρὰ δὲ αὐτὴν (τὴν Πύλον) ποταμὸς Λάδων κάτεισιν ἐς τὸν Πηνεῖον, which he supposes to mean that Pylus stood at the junction of the two rivers. This inference will meet perhaps with approvers, but I cannot be of the number. There are so many faults and omissions in this part of the text of Strabo, and the expressions above cited are so ambiguous, that little certainty can be derived from it on this particular question; nor can we learn from the words of Pausanias any thing more precise than that the Ladon flowed by Pylus in its way to the Peneius. Here, as in many other instances, the meaning of the ancient authors is most securely de-

duced from an inspection of the places themselves, and from a general view of the geography. Agrápidhokhori is too near to *Elis*, and too much to the right of the direction of the upper road from Olympia, to be the site of Pylus. The distance, indeed, given by Diodorus, is not far from the reality between Kaloskopí and Agrápidho; but Pausanias is the best authority, and his 80 stades is nearly the exact medium between the 70 stades of Diodorus and the 12 M. P. of Pliny.

MEROE, NAPATA, by W. B. D.

In this article no reference is made to the Travels of Messrs. Waddington and Hanbury, nor to the work of the former which was published in the year 1822. These gentlemen were the discoverers of the ancient city at Djebel Birkel, which, in my Preface to Burckhardt's Travels in Syria, I endeavoured to prove to have been Napata, the city taken and plundered by Petronius, the lieutenant of Augustus, in the year B. C. 22. At Napata are ruins of two very different times; of the earlier there are temples of about the 16th century B. C., when the so-called 18th dynasty comprehended Napata within the kingdom, of which Thebes was the capital; the other as late as the Roman empire, when the course of the Nile above and below Djebel Birkel formed, and perhaps had formed ever since the Persian conquest of Egypt, a state independent of the latter, and allied, united or subjected, to the celebrated Meroë, of which the ruins still subsist near Shendy. Their relationship is proved by the

similarity of the pyramids in the two situations, a species of monument not found in the kingdom of Thebes. The name Merawe, therefore, which is attached to a village near Djebel Birkel, has probably been derived from the greater and more ancient Meroë near Shendy, and may have displaced that of Napata when the latter ceased to be Egyptian. When further researches are made on the ancient sites near Djebel Birkel, the connexion of the two Meroë's may possibly be confirmed by the discovery of objects of art similar to those found at the Southern Meroë by Signor Ferlini in the year 1834, proving the existence of a school of art in Meroë, derived originally, as well as its religion, from Egypt, but which, in consequence of the long separation of the two peoples, resembled exactly neither those of Egypt or of Greece.

MYCENÆ, by the EDITOR.

The Editor here states that the subterraneous buildings in the ruins of Mycenæ were generally considered as the identical ὑπόγαια οἰκοδομήματα described by Pausanias as the treasuries of the Atridæ, "until Mure published an Essay in the Rhenish Museum for 1839, in which he endeavoured to establish that all such buildings were the family vaults of the ancient heroes, by whom they were constructed," and that "in the great edifice at Mycenæ the inner apartment was the burial-place, and the outer vault the heroum or sanctuary of the deceased. This opinion," the Editor adds, "has been adopted by most modern scholars, but has been

combated by Leake, who adheres to the ancient doctrine. The two opinions may, however, be to some extent reconciled by supposing that the inner chamber was the burial-place, and that the outer contained the arms, jewels, and other ornaments most prized by the deceased." But this supposition will not conciliate the opposite opinions. It is undoubtedly *possible* that the inner chamber of the extant building may have served as a place of sepulture to Atreus, but the arguments brought forward in the Peloponnesiaca are intended to prove that all such constructions, of which we have other examples at Orchomenus in Bœotia and at Pharis in Laconia, belonged to an architecture which preceded the first invention of the regular orders, and of which Trophonius and Agamedes, who are supposed to have lived about the time of the Trojan war, were celebrated masters. These constructions were not of the nature of monuments or sanctuaries dedicated to departed heroes, but subterraneous places of deposit (*θησαυροί*), by which name they were known to the later Greeks, who employed similar constructions on a smaller scale for a variety of ordinary purposes, when both treasuries and heroa had assumed forms consistent with the principles and customs of the Ionic and Doric orders. See "Remarks on the Thesauri of the Ancients, by the Rev. R. Walpole, in Memoirs," &c., i. p. 561.

MYONIA, by the EDITOR.

I have placed *Myonia* at Athymía, a village situated between Salona (*Amphissa*) and Galaxídhi

(*Œantheia*). "This," says the Editor, "cannot be correct, as, according to the passage in Pausanias, Myonia lay farther inland than Amphissa." The words are these: Ἄνω μὲν ὑπὲρ Ἀμφίσσης πρὸς ἤπειρον Μυωνία, σταδίοις ἀπωτέρω τριάκοντα Ἀμφίσσης. Again, Οὗτοι (οἱ Μυωνεῖς) μὲν δὴ ὑπεροικοῦσιν Ἀμφίσσης· ἐπὶ θαλάσσης δὲ Οἰάνθεια. My reasons for identifying the ruins at Athymía with *Myonia* are, 1. That they are the ruins of a fortified town of some importance, such as we may presume Myonia to have been from its dedication at Olympia (Pausan. 6, 19), and from its mention by Thucydides (3, 10). 2. That the ruins stand in a lofty situation at some distance from the sea, which answers sufficiently to the ὑπὲρ Ἀμφίσσης and the ὑπεροικοῦσιν Ἀμφίσσης of Pausanias. 3. That on neither of the two roads leading directly into the interior, namely, that by Lidhoríki into *Ætolia*, and that by Graviá (*Cytinium*) into *Doris*, are there any vestiges of an ancient city or any position adapted to one, as I can testify, having traversed them both. With these facts before us I cannot admit that the words ἄνω πρὸς ἤπειρον are inapplicable to the ruins at Athymía, still less the ὑπεροικοῦσιν Ἀμφίσσης when followed by ἐπὶ θαλάσσης δὲ Οἰάνθεια. *Vide* Travels in Northern Greece, ii. p. 502.

NASAMONES, NILUS, by W. B. D.—NIGIR, by E. B. J.

The exploring expedition of Messrs. Werne and d'Arnaud, and more recently that of M. Brun-Rollet, on the Bahr-el-Abiad or White Nile, have not

only identified the real Nilus of Ptolemy, but have traced it to within a very few degrees of the Equator. Their discoveries, when compared with those of the missionaries, Krapf and Rebmann, who, proceeding from Mombas on the eastern coast of Africa, discovered two summits of perpetual snow, named Kenia and Kilimandjáro, the former of which is very near the Equator, the latter about 3° south of it[6], leave scarcely a doubt that these mountains contain the most distant, or at least the most southerly sources of the Nile, and that these are the mountains, which, in the Greek text of Ptolemy, are named τὸ τῆς Σελήνης ὄρος, and in the Latin text, the *Montes Lunæ*. And this identity is confirmed, by the agreement of the modern map with that of Agathodæmon, which accompanies and illustrates the work of Ptolemy, as well in the bearing of the mountains from the Delta of the Nile, as in their position with regard to the eastern coast of Africa, where it recedes farthest to the west. But the most interesting confirmation is found in Ptolemy's description of the Montes Lunæ, as mountains covered with snow, the melting of which produces two lakes, issuing in two rivers, the

[6] One of these snowy mountains, probably Kenia, was seen in 1849 by Capt. Short, an Englishman in the naval service of the Imam of Muskat, who entering the large river Juba, which is under the Equator, ascended it in a schooner about 200 miles in a north-westerly direction, and there saw the snowy summit bearing to the southward of west from his position at an estimated distance of 60 miles. His sketch of the mountains was published in the Athenæum of August the 27th, 1853.

junction of which forms the Nile[7]. The lakes indeed remain to be discovered, and as the whole valley of the White Nile is low and subject to inundations, they may, perhaps, never be identified, but even in that case, we must conclude that Ptolemy had knowledge of the two summits discovered by the missionaries. Snow under the Equator implies perpetual snow, and a height probably of not less than eighteen thousand feet.

According to the observations of the missionaries the Montes Lunæ are placed by Ptolemy about 10° too far to the south, but extension beyond the truth is characteristic of Ptolemy, whenever he depended entirely upon oral information; thus we find, that although correct in his latitudes of Alexandria, Syene, and Meroe, he is already $3\frac{1}{2}°$ in excess at a place so near to Meroe, as the junction of the Astapus and Nile at Khartúm, and no less than 12° in excess in his latitude of the Lake Coloe, which gives rise to the Astapus or Bahr-el-Azrek or Blue Nile.

We can now estimate the extent of the geographical knowledge of Africa, which the Greeks and Romans had attained in the second century of the Christian æra.

The course of the Nile between the extreme southern limit of Egypt (Wady Halfa), and the junction of the Atbara, is more correctly described by Strabo from Eratosthenes, four centuries

[7] τὸ τῆς Σελήνης ὄρος, ἀφ' οὗ, ὑποδέχονται τὰς χίονας αἱ τοῦ Νείλου λίμναι. Ptolem.

before the time of Ptolemy, than in the Ptolemaic map [8]. This map is still more erroneous in the situation of Napata, the principal city in the same part of the Nile, on which question Ptolemy might have derived better information from the explorers sent by Nero, as reported by Pliny (6, 29). Above Egypt the latitude of Meroe alone is remarkable for its correctness, and seems to have been the result of an astronomical observation made at the time when that city was in its most flourishing condition. Its position, nevertheless, in the fork of the Nile and Astaboras is quite erroneous; the ruins of Meroe being situated near the right bank of the Atbara or Astaboras, about 35 geographical miles in direct distance above the junction of that river with the Nile [9]. Eratosthenes was in error in describing Meroe as an island [10], instead of a peninsula, but the map of Ptolemy, by embodying this error, has not only created an island where none exists, but has thrown into confusion the plain and true statement of Eratosthenes, as to the branches of the Nile which bound the peninsula of Meroe. These were no more than two, the Astaboras (Atbara), and the Astapus or Blue Nile. We may here remark that Ast was a Macedonian prefix, found in the names of some of the rivers of that or the neighbouring countries, whence Atbara became in Greek Astaboras. Astapus was the

[8] The reader may find some remarks applicable to these questions, in my Preface to Burckhardt's Travels in Syria, p. 18.

[9] The *Exploratores Neronis* made the distance 70 M. P.

[10] ap. Strabon. p. 786.

name of a Macedonian river, one of the branches of the Axius. Eratosthenes adds, that the (African) "Astapus was called Astasobas by some persons, who affirmed that Astapus was the river which arose in certain lakes to the southward." This remark of Eratosthenes is now explained by the ruins named Soba, which still exist on the right bank of the Blue Nile, not many miles above its junction with the White river or Nile of Ptolemy at Khartúm. The Astasobas therefore, or river of Soba, was the part of the Astapus below the junction of its principal tributary, the main branch of the Astapus being the river upon which Sennaar is situated, and which has its origin in the Lake Dembea, and the Nile-sources of Bruce.

The imperfection of Ptolemy's geographical knowledge beyond the extreme limits of Egypt or the Second Cataract, is again shown by his not having noticed any branch of the Nile to the southward of the Astapus, though we now know that there is a large affluent, named Sobát, flowing to the right bank of the Nile from the same mountains which give rise on the other side to the Astapus and its tributaries, and that about 60 miles higher up in the course of the Nile, there is another large affluent from the west.

Of the latter there is some reason to believe that Herodotus had received intimation. He relates that in the reign of Psammetichus a large body of Egyptians, stationed at Elephantine for the protection of the Æthiopian frontier, discontented at being left three years in garrison without relief, deserted, and marching into Æthiopia, submitted to a king,

by whose orders they proceeded against some of his enemies, and having driven them out of their country, took possession of it themselves.. They were known to the Greeks by the name Automoli (deserters), their local name was Asmakh, meaning, those who stand on the left hand of the king. One of the most remarkable observations of the late explorers of the White Nile, is the peculiar stature and features of the natives towards the southern extremity of their journey, the greater density of the population, their superiority to those on the lower parts of the river in manners and customs, as well as the resemblance of their arms and manufactures to those of Ancient Egypt, rendering the conjecture highly probable, that the Automoli, by their superiority in arts and arms over the Æthiopians, became masters of a large territory on the banks of the river, and intermarrying with females of the country, produced a race which has very little resemblance to the Negro. Herodotus expressly states, that in refusing to return at the solicitation of Psammetichus, they told him that they should find wives in the country they were going to: the historian adds, that by the reception of the Automoli the Æthiopians became civilized, and adopted Egyptian customs (ἡμερώτεροι γεγόνασι Αἰθίοπες, ἤθεα μαθόντες Αἰγύπτια). In iii. 30, Herodotus refers to the beauty and lofty stature of the Æthiopians (λέγονται εἶναι μέγιστοι καὶ κάλλιστοι ἀνθρώπων πάντων).

In the time of Herodotus the Automoli were settled at a distance of four months above Elephantine, and half that distance from Meroe, the

journey from Elephantine to Meroe being equal to that from Meroe to the Automoli. The direct distance between the two extreme points, is about 960 geographical miles, which will give for four months or 120 days a daily rate of eight geographical miles in direct distance, a rate not too small for so long a line.

The following are the words of Herodotus (2, 31):—

Μέχρι μέν νυν τεσσέρων μηνῶν πλόου καὶ ὁδοῦ γινώσκεται ὁ Νεῖλος, πάρεξ τοῦ ἐν Αἰγύπτῳ ῥεύματος· τοσοῦτοι γὰρ συμβαλλομένῳ μῆνες εὑρίσκονται ἀναισιμούμενοι ἐξ Ἐλεφαντίνης πορευομένῳ ἐς τοὺς Αὐτομόλους τούτους· ῥέει δὲ ἀπὸ ἑσπέρης τε καὶ ἡλίου δυσμέων. Τὸ δὲ ἀπὸ τοῦδε, οὐδεὶς ἔχει σαφέως φράσαι, ἐρῆμος γάρ ἐστι ἡ χώρη αὕτη ὑπὸ καύματος. Ἀλλὰ ταῦτα μὲν ἤκουσα ἀνδρῶν Κυρηναίων, φαμένων ἐλθεῖν τε ἐπὶ τὸ Ἄμμωνος χρηστήριον καὶ ἀπικέσθαι ἐς λόγους Ἐτεάρχῳ τῷ Ἀμμωνίων βασιλέϊ, &c.

"The course of the Nile is known through a journey partly by water and partly by land of four months, in addition to its course through Egypt; for in reckoning the amount of distance, it will be found that so many months will be expended, by a person travelling from Elephantine to these Automoli. The river (here) flows from the west and the setting sun. What is beyond, no one can say, the country being desert on account of the heat. But this I have heard from some men of Cyrene, who related that they had visited the Oracle of Ammon, and had there learnt from Etearchus, king of the Ammonii, &c."

The historian then proceeds to relate the discovery by the Nasamones of the great river flowing

from west to east, which I have endeavoured to prove to have been the same as the Nigir of Ptolemy, and identical with that part of the course of the Quorra, where it flows in the direction above mentioned. I need not repeat the arguments on this question which were published in the Second Volume of the Journal of the Royal Geographical Society, and this is the less necessary, as I have the satisfaction to observe, that E. B. J. sanctions my views on the subject, and has inserted the substance of my paper in the article Nigir of Dr. Smith's Dictionary.

According to the data of Herodotus, the place where the Automoli submitted to the king, was at that part of the course of the Nile, where two great tributaries from opposite quarters join the Nile at the distance from one another above stated, and where the course of the Nile from the mouth of the western to that of the eastern affluent is from west to east. As here the great marshes and inundations commence, through which it is often difficult to trace the main stream, the Egyptians themselves, at the time of Herodotus, may have had little knowledge of the Nile beyond the marshes, and may have been uncertain as to its origin. The western branch, and the subsequent course of the main river from west to east, might create an opinion that the Nile rose in the centre of the African continent, and its westerly origin would be confirmed in the mind of Herodotus, on hearing of the easterly course of the Nigir, which river the king of the Ammonii supposed to be the Nile (εἶναι τὸν Νεῖλον, c. 33).

The part of the Nile-valley in which the exploring travellers sent by Mehmet Alý met with the populous nation of lofty stature, was considerably to the southward of that which the Automoli possessed in the time of Herodotus, or about 200 years after their migration from Egypt; but nothing is more likely, than that the Automoli or their descendants should have conquered that southern country, and that the race should now be found in a part of the Nile-valley where the ground begins to rise, where the soil is more productive, and the climate more healthy.

NICOPOLIS of EPIRUS, by the EDITOR.

In describing the ruins of this city the Editor says, "Three hundred yards westward of the Paleó-kastron are the remains of a small theatre but little dilapidated. Colonel Leake says that it appears to be about 200 feet in diameter, but Lieutenant Wolfe describes it as only 60 feet in diameter." Mr. Wolfe's measurement was probably intended for the breadth of the orchestra or diameter of the lowest seat of the cavea. Mr. Donaldson, the distinguished architect, who visited Nicopolis some years after me, and measured the extant remains, concluded that the entire breadth of the small theatre was very nearly 200 feet, the diameter of the cavea being 160, and the diameter of the lowest seat 42 feet. See a plan of the buildings of Nicopolis reduced from Mr. Donaldson's drawings at the end of the first volume of my Travels in Northern Greece.

ŒNOE ARGOLIDIS, by the Editor.

Œnoë, a small town of the Argeia, is adjudged by the Editor to have stood on the left bank of the Charadrus, the southern of the two rivers (the other being the Inachus) which, rising in the Artemisian range, unite at Argos. As the Editor assents to my opinion that of the two roads, named Prinus and Climax, which led from the Argive frontier to Mantineia, the southern was the Prinus and the northern the Climax, it remains for him to explain how the position of Œnoë on the left bank of the Charadrus can be reconciled with the facts stated by Pausanias, namely, that the Prinus, not far from its sources in Mount Artemisium, flowed along the road, that it there separated the Mantinice from the Argeia, and that all the rest of its course was through the Argeia, whence it was called by Æschylus an Argeian river. In fact, this is one of the numerous passages in Pausanias where it is necessary to identify the places mentioned by him before his meaning can be well understood or his text verified. In the present instance it is desirable to discover remains of Œnoë, of the temple of Diana which gave name to Mount Artemisium, and of the source of the Inachus, as well as to trace that part of its course where it followed the road Prinus. These places cannot have been at any great distance from one another, as the Diana of Artemisium bore the epithet of Οἰνωᾶτις.

ORNEÆ, PHLIUS, by the Editor.

The Editor says, "Leake places Orneæ too far to the east," and "supposes Phliûs to be represented by some ruins on the western side of the mountain

now called Polýfengo [11], but these are more correctly assigned by Ross to the ancient city of Aræthyrea." To this I reply, that if the valley of St. George be the Phliasia, which cannot be doubted, as any other hypothesis would throw the geography of all this part of the Peloponnesus into confusion, Polýfengo must be the position of Phliûs, as we there find the evident vestiges of a polis of the date when Phliûs is known from history to have flourished. Neither Strabo nor Pausanias hints at the existence in their time of any remains of the Homeric city Aræthyrea. Its position according to Apollonius Rhodius was at the sources of the Asopus, and accordingly we find that the principal feeders of the river, which, receiving the contributions of the surrounding mountains in the plain near the ruins of Phliûs, flows from thence through narrow valleys to Sicyon, thus answering to the Asopus (Strabo, p. 382), issue from the foot of Mount Gavriá at a distance of three or four miles to the westward of the ruins of Phliûs at Polýfengo. Now this is precisely the distance of Phliûs from the site of Aræthyrea, as given by Strabo. Nothing seems wanting, therefore, to the proofs of Polýfengo having been the site of Phliûs. The two streams or torrents which join the Asopus near the ruins of Phliûs have their origin in very different directions, one coming from the westward in that of Alea, the other from the southward in the direction of Argos. The latter was probably the river Orneæ, upon which the town of the same name was situated at a distance of 120 stades from Argos; Lyrceia, the site

[11] More correctly "at Polýfengo on the western side of Mount *Tricarana*."

of which is recognised at Skala in the valley of the Inachus, being midway or 60 stades from either place (Pausan. 2, 25). Professor Ross supposed Liondí to be the site of Orneæ; but the Liondí (for there are two villages of this name) which is near the western tributary of the Asopus is not less than 140 stades, and not by the road, as the distance of Orneæ from Argos is measured by Pausanias, but in a direct line; the name, moreover, seems to indicate the former existence here of a Leontium, of which history has made no mention. If Ross has erred as to the situation of Phliûs, as I conceive to have been the case, he is the more likely to have been misled as to Orneæ; for it seldom happens that one can be quite sure of the identity of an ancient site until all those around it are determined. Of this truth I had full experience, not having had in any part of the Peloponnesus any *fax prælucens* but that of Pausanias. It is not surprising that it should be difficult to find any certain vestiges of Orneæ, a Homeric city which was destroyed by the Argives as early as 416 B. C. (Thucyd. 6, 7), and is described as a deserted site by Strabo; its position cannot, however, have been very far from where I have marked it in the map in Peloponnesiaca, namely, on the river Orneæ, at a distance of about 120 stades from Argos.

OROPUS, by the Editor.

The Editor says, "Leake originally placed Oropus at Oropó and Delphinium at Skala (the port called the Holy Apostles), but in the second edition

of his Demi he leaves the position of Oropus doubtful." I have never had any doubts as to the position of the original Oropus, which still retains its name on a site quite Hellenic in its appearance situated at safe distance (about $2\frac{1}{2}$ miles) from the sea at Skala, defended on one side by a torrent, and having below it ground in which have been found ancient sepulchres containing brazen armour. The doubts alluded to by the Editor arose in deference to a Paper by Mr. Finlay in the third volume (4to) of the Transactions of the Royal Society of Literature, in which he questioned my position of the Oropian Amphiaraeium. Subsequent discoveries, however, have proved that my original conjecture as to the temple of Amphiaraus was correct; and I still believe Oropus to have stood at Oropó. The only writers that absolutely require a maritime situation for that city are Diodorus, who says (14, 17) that the Thebans, having attacked the Oropii and taken their city, removed them to a distance of seven stades from the sea, and Pausanias, who describes Oropus as being on the sea-side (ἡ μὲν οὖν πόλις ἐστὶν ἐπὶ θαλάσσης). The probability is that when the Athenians possessed the Oropia, or whenever their naval forces had no rivals in the Eubœan waters, the Oropii dwelt on the sea-side, where, just behind the site of Delphinium at Skala, rises a strong height, upon which are some remains of a fortress. When the Thebans prevailed the Oropii were removed to their old abode at Oropó. It is true that the distance of Oropus from the sea, as given by Diodorus, as well as that by Pausanias between the maritime Oropus and the Ἅλσος of

Amphiaraus, are both greatly erroneous in defect; but ancient computations of distance, transmitted through a succession of manuscripts, may corroborate, but can never be preferred to monumental evidence.

PASSARON, by the EDITOR.

The statement and conclusion of the Editor under this head being the same as my own, and still leaving the identification of Passaron one of the most interesting objects of inquiry in Epirus, I have no other intention at present than to suggest to future travellers the importance of continuing such an excavation at the Paleókastro near Dhramisiús as I commenced, but was unable to persevere in. There is no site in Epirus, not even Dodona, offering a better prospect of inscriptions which might throw light on geography and history, and help us perhaps to the names and situations of some of those seventy cities of Epirus which were doomed to destruction and plunder by the senate of Rome in the year B. C. 167. As to Passaron, I have already stated (Travels in Northern Greece, iv. p. 81) that the evidence of Polybius in the fragments of his 27th and 30th books, and that of Livy (i. 45, c. 26, &c.) following the same Greek historian, tends to place Passaron near the sea; and this seems to receive confirmation from Anna Comnena, who makes mention of a harbour on the coast of Epirus named Passara (τὰ Πάσσαρα). We must, however, consider that there was an interval of thirteen centuries between Polybius and Anna; that during that time almost all the old names of Greece, except those of places which had

never been without inhabitants, had become obsolete; that while written geographical evidence as to the interior of ancient Epirus is lamentably deficient, it is not so on the coast; nevertheless, that neither Strabo nor any other author has named a Passaron or Passara among the maritime sites. The maritime Passara, therefore, may have been a place too obscure to obtain mention in early history, or this Epirote name may have been applied in later times to a harbour which circumstances had brought into notice. On the other hand, monumental evidence is strongly in favour of placing Passaron at the Paleókastro of Dhramisiús. Molossis was inhabited by a people divided into small independent communities, dwelling in strong fortified positions, as proved by their extant remains. In the midst of them are the ruins in question, consisting of a fortress and a sacred inclosure which comprehended two temples, and a theatre capable of containing eighteen or twenty thousand spectators. It was evidently the place at which the cities of Molossis met in general assembly from time to time, and which, when the kings of Molossis had extended their authority over the whole of Epirus, still continued to be the place of national assemblage where sacred festivals and solemn games were celebrated; for the monuments are precisely of the same kind as those of which remains exist at the Isthmus, at Nemea, and at Epidaurus. Those near Dhramisiús are evidently of the time when the kingdom of Epirus was in the height of its power under the Æacidæ. Nothing more likely, therefore, than that the mutual oaths which bound together the king and the people of

Epirus,—the king to govern according to the laws, the people to defend the kingdom,—were here taken. Εἰώθεισαν οἱ βασιλεῖς ἐν Πασσαρῶνι, χωρίῳ τῆς Μολοσσίδος, Ἀρείῳ Διὶ θύσαντες, ὁρκωμοτεῖν τοῖς Ἠπειρώταις καὶ ὁρκίζειν, αὐτοὶ μὲν ἄρξειν κατὰ τοὺς νόμους, ἐκείνους δὲ τὴν βασίλειαν διαφυλάξειν κατὰ τοὺς νόμους (Plutarch, Pyrr. c. 5). In this passage it is observable that Passaron is not called a city but a χωρίον; nevertheless it is not unlikely, that being the chief place in the kingdom for public affairs, the fortress may have been the first place attacked and taken by Anicius Gallus; that for some unexplained but easily imagined reasons the Roman commander may have passed the winter here rather than at Dodona; that from hence L. Æmilius Paullus issued the atrocious decree of the Roman senate; and that from hence Anicius proceeded to embark for Italy as soon as the fleet which had carried over the Roman army of Macedonia from Oricum had returned to the coast of Epirus. Let us hope that it will not be long before Greece will be in a state which shall admit of the solution of a question very interesting to ancient history and geography.

PRÆSUS, by the Editor.

The difficulty as to Præsus and Priansus is explained in the Numismata Hellenica, Ins. p. 32. Priansus was situated between Gortys and Hierapytna, and Præsus between Hierapytna and Itanus. Strabo has described (p. 478) the position of them both; but in the part of his text adverting to the former it appears that the words ἐν Πραίσῳ and οἱ Πραίσιοι

have been erroneously substituted for ἐν Πριάνσῳ and οἱ Πραιάνσιοι. With this slight amendment of that which was probably an erroneous correction made by ignorant transcribers, Strabo is made to agree with present appearances and the true topography, and to cause it to harmonize with the rest of the ancient geography of the southern and eastern sides of Crete. The coins of the two cities differ both in types and legends; those of Præsus are inscribed ΠΡΑΙΣΙ, those of Priansus ΠΡΙΑΝΣΙΕΩΝ: it is true that the latter legend requires a nominative Πριανσεῖς for the ethnic, not Πριάνσιοι, but we often find on coins of the same place, but of different times, variations in the termination of the gentile.

PRYMNESSUS, by L. S.

"Franz has proved by incontrovertible arguments from inscriptions that Prymnessia must have been situated at Seid-el-Ghazi." The late Mr. J. R. Steuart informed me that he had seen more than one inscribed marble at Seid-el-Ghazi, proving the place to have been the ancient Nacoleia, an identification which is supported by the Tabular Itinerary. Prymnessus stood probably to the west of Seid-el-Ghazi in the valley of the Thymbres. *Vide* Numismata Hellenica, Asia, pp. 86, 103.

PYLUS of MESSENIA, by the Editor.

With reference to the difficulty which occurs "in reconciling the account of Thucydides with the present state of the coast," the Editor agrees with

Mr. Grote in concluding "that a great change has taken place in the two passages which separate Sphagia from the main land." I have preferred the hypothesis that there has been some error in the information or in the text of Thucydides (Travels in the Morea, i. p. 415; Peloponnesiaca, p. 193), and I cannot but adhere to the opinion that this is the more reasonable solution of the problem. The statement of Thucydides is that at one of the straits there was room for two triremes to enter, at the other for eight or nine (τῇ μὲν δυοῖν νεοῖν ΔΙΑΠΛΟΥΝ, τῇ δὲ ὀκτὼ ἢ ἐννεά), an expression which requires no space for the manœuvres or lateral movements of the ships, but merely room to enter with their oars in action. One hundred feet would have been sufficient for this operation at the northern entrance, where the width is near 500 feet, and 450 at the southern, where the opening is more than 4000 feet in breadth. Dr. Arnold, who erroneously supposed the peninsula of Pylus to have been the ancient Sphacteria or Sphagia, adduces in support of his theory the shallowness of the northern entrance of the bay of Navarino between the peninsula and the island, where a depth of 18 inches, he says, was not sufficient for an ancient trireme. But this inadequate depth being caused by a bar of sand, such as has occurred on all the coasts of Greece where the same causes of accumulation have been in operation, the fact is no sufficient objection to the bay of Navarino and its island as the places to which the description of Thucydides is to be applied, so that the difficulty rests only on the enormous disproportion between the two entrances of the bay of

Navarino, as we now find them, and the number of triremes by which Thucydides measured those openings. If we suppose with Mr. Grote (vi. p. 433) that "a great alteration has taken place in the two passages which separate Sphacteria from the main land," nothing less will suffice for the text of Thucydides than some geologically recent but unrecorded convulsion of nature which has since the year 425 B. C. detached from the rocks of the south end of Sphacteria, or from the steep and lofty mountain of New Navarino opposite to it or in part from both, a portion of them amounting to between three and four thousand feet in breadth, and has submerged that enormous mass to the depth of 30 or 40 fathoms, such being the actual depth of the entrance by which the Turkish and allied fleets entered the bay of Pylus in 1827. That any such awful convulsion of nature could have happened so recently without leaving any vestiges of it on the spot, nor any traces of it in Greek or Byzantine history or in the archives of Venice, is quite incredible. On the other hand, without some such supposition it is impossible to believe that Thucydides could ever have seen the place himself, as in that case it could never have occurred to him to measure such an opening as the southern entrance of the Pylian bay by any number of triremes. It is evident also from other parts of his narrative that if the text be correct, his information on the topography must have been very imperfect. The proportion, for instance, between the two entrances into the bay of Pylus is not, as he states, that of 8 or 9 to 2, but of 16 or 18 to 2. Again, the 15 stades which his text assigns as the length of the island

Sphacteria agrees neither with the peninsula of Pylus, which Dr. Arnold supposed to be Sphacteria, nor with the island of Navarino (the real Sphacteria), the former being seven stades in length, the latter twenty-five. Nor is there any inconsistency in believing that the information of Thucydides on the topography of the bay of Pylus may have been erroneous, while the accounts which he received of the military occurrences may have been true and accurate, as an inspection of the places gives us the strongest reason to believe. The topography of military operations is a part of the materials of the historian, which, unless he has himself been engaged in them, are among the last and most difficult for him to obtain with correctness, and must have been doubly so in an age when that important branch of the art of war, military surveying, can scarcely be supposed to have existed. Very soon after the Sphacterian expedition, if not at that exact time, Thucydides was employed in the command of an Athenian squadron on the coast of Thrace, from whence he did not return to Athens until the end of 20 years (Thuc. 5, 26). That exile was chiefly passed on his estate at Scapte Hyle in Thrace, where the greater part of his history was composed (Plutarch de Exil. p. 609, c). Thus cut off from the information which he might otherwise have derived from Athenians who served at Sphacteria, he may never have had any opportunity of obtaining a correct conception of the topography of Pylus and its bay until he returned to Athens, when we have reason to believe that death shortly prevented him from putting the last hand to his κτῆμα ἐς ἀεί.

ON THE STADE,

AS A LINEAR MEASURE.

Some modern geographers have supposed that the ancients, in computations of distance, employed stades of different lengths, varying in the number contained in a degree of latitude from 500 to 750 [1]. By means of this variety, they have endeavoured to reconcile the conflicting statements of the ancient mathematicians as to the measure of the perimeter of the globe, as well as to explain the disagreements

[1] D'Anville, Mesures Itinéraires, 8vo., Paris, 1769.—Gosselin, Géographie des Grecs Analysée, 4to., Paris, 1790.—Recherches sur la Géographie Systématique et Positive des Anciens, 4to., Paris, 1797.—Observations Générales sur la manière de considerer et d'évaluer les anciens Stades itinéraires, 4to., Paris, 1805.—Recherches, &c., ap. Géographie de Strabon, v. p. 501.—Romé de l'Isle, Métrologie, 4to., Paris, 1789.—Freret, Mém. de l'Acad. des Inscr. xiv., 1ère partie, p. 160; xxiv. p. 432, 548.—D'Anville, *ib.*, xxvi. p. 82, 92; xxviii. p. 346; xxxi. p. 292.—Delabarre, *ib.*, xiv., 1ère partie, p. 512; xix. p. 533, 547, 562.—De la Nauze, *ib.*, xxvi. p. 101; xxviii. p. 362; xxxvi. p. 86.—Gibert, *ib.*, xxviii. p. 212.—Jomard, Mém. sur le Système Métrique des Anciens Egyptiens, ap. Description de l'Egypte, vii. p. 8.—In France, the hypothesis was not without opponents, as Montucla, Hist. de Math. i. p. 241.

which, on the supposition of an uniform stade, continually occur in applying ancient distances to true measurements on a globe or map. An attentive examination, however, of all the evidence which may be derived on this question from ancient authors or extant monuments, justifies the opinion that the stade, as a linear measure, had but one standard, namely, the length of the foot-race, or interval between the ἀφετηρία and καμπτῆρ in all the stadia of Greece, and which is very clearly defined as having consisted of 600 Greek feet[2].

The Attic foot, taken from the stylobate of the Parthenon, was equal to 12·1375 English inches[3]: the length of the stade, therefore, in English measure, was 606·875 feet. The stade was generally considered equal to one-eighth of the Roman mile[4],

[2] Αἱ δ' ἑκατὸν ὀργυιαὶ δίκαιαί εἰσι στάδιον ἑξάπλεθρον, ἑξαπέδου μὲν τῆς ὀργυιῆς μετρευμένης καὶ τετραπήχεος· τῶν ποδῶν μὲν τετραπαλαίστων ἐόντων, τοῦ δὲ πήχεος ἑξαπαλαίστου. Herodot. 2, 149.—See also Strabo, p. 322.—Suid. in Μίλιον, Πλέθρον, Στάδιον.—Phot. Lex. in Πλέθρον, Στάδιον.—Eustath. in Il. ε. 245. φ. 407; Od. λ. 576.

Herodotus has mixed the Greek measures with the Egyptian, and has added also the parasang: whence it would seem that the inhabitants of Lower Egypt, where many Greeks were then settled, had in his time borrowed the stade and its subdivisions from the Greeks, and that the parasang had been adopted during their subjection to the Persians. The only proper Egyptian measures with which we are acquainted are the schœnus of 24,000 cubits, and the cubit divided into 28 digits.

[3] Stuart's Ant. of Athens, ii. p. 35. Ed. Kinnaird.

[4] λογιζομένῳ δὲ ὡς μὲν οἱ πολλοὶ τὸ μίλιον ὀκτωστάδιον. Strabo, p. 322.—Polyb. 3, 39.—Vitruv, 1, 6.—Columel. 5, 1.—Frontin. de Expos. form. ap. rei agr. Script., Goes. p. 30.—Livy constantly converts the stades of Polybius into miles at this

or 625 Roman feet[5], the mile having been 5000 of those feet. The Roman foot, taken from extant Roman monuments, was 11·6 English inches[6]; deduced from the Greek foot of the Parthenon, in the proportion of 625 to 600, or 25 to 24, it was 11·652 inches. By the former proportion, the Roman mile was equal to 4833 English feet, or 22 feet less than 8 stades: thus perfectly agreeing with Plutarch, who informs us that the mile was some-

rate. Compare Polyb. 3, 42; Liv. 21, 27—Polyb. 3, 101; Liv. 22, 24—Polyb. 8, 28; Liv. 25, 9—Polyb. 14, 4; Liv. 30, 5—Polyb. 14, 8; Liv. 30, 8. In the two last of these examples the περὶ of Polybius produces only an approximation in Livy; in the first of the two the "περὶ 60" is "7 millia," in the second the "περὶ 30" is "4 millia." Strabo, in testifying that eight stades were equal to a Roman mile, asserts that Polybius added two plethra, or a third of a stade (Πολύβιος, προστιθεὶς τῷ ὀκτωσταδίῳ δίπλεθρον, ὅ ἐστι τρίτον σταδίου, p. 322); but this is contrary to the testimony of Polybius himself, who describes a great road through Spain and France as divided into miles of eight stades each (ταῦτα μὲν βεβημάτισται καὶ σεσημείωται κατὰ σταδίους ὀκτὼ διὰ Ῥωμαίων ἐπιμελῶς, 3, 39). Strabo, therefore, seems to have misunderstood Polybius, who perhaps meant only to say that a Roman stade, or measure of 600 Roman feet, would require $8\frac{1}{3}$ of them to the mile; for $8\frac{1}{3}$ to 8, or 25 to 24, is exactly the proportion of the Greek foot to the Roman, as given by Pliny.

[5] "Stadium centum viginti quinque nostros efficit passus, hoc est, pedes sexcentos viginti quinque." Plin. H. N. 2, 21 (23).

[6] Folkes (in the Philosophical Transactions, anno 1736) concluded $\frac{966}{1000}$ of the English foot, or 11·592 inches, to have been the length of the Roman foot.—Raper (in the Phil. Trans. 1760) makes it 11·64 in the time of Titus, and 11·58 in that of Alexander Severus. The medium of ten different measurements of the Roman foot, in the Observations Préliminaires of Gosselin, Géographie de Strabon, tome i. p. lxi., gives very nearly the same result.

thing less than 8 stades[7]. And hence it seems evident that the Greek stade contained something more than 625 Roman feet. Indeed, when it is considered that the stade was a measure foreign to the Romans, and was composed of a foot different from theirs in length, there was little chance of its having been an exact fraction of a mile, though the accidental proximity was probably the origin of the furlong or eighth, as a division of the mile.

Results so nearly coinciding, though drawn from monuments and authorities, between the dates of which there was an interval of six centuries, tend strongly to show the accuracy, permanence, and uniformity of Greek measures—of which we have a parallel instance in the Attic weights, particularly as exemplified in thirteen denominations of silver money, of which the standard continued to be correctly preserved during at least seven centuries. An accurate standard of the foot was obviously not less necessary to the Greeks than that of the drachma; or rather it was a natural consequence of the perfection, to which they attained in architecture and other arts, founded on metrical principles. For the standard of the stade as a measure of distance the stadium of every large city furnished a constant and easy reference, and thus tended to keep the measure accurate and uniform: for there can be

[7] τὸ δὲ μίλιον ὀκτὼ σταδίων ὀλίγον ἀποδεῖ. Plutarch, C. Grac. 7. Caius Gracchus caused mile-stones to be erected on the great roads of Italy, as well as other stones at short intervals on each side of the road, that horsemen might mount their horses without the assistance which had before been necessary (ἀναβάλεως μὴ δευμένους).

little doubt that whatever difference there may have been in the construction of stadia as places of assembly, the length of the foot-race—that contest which gave immortality to the victor, and for which competitors were periodically collected from every country of Greek origin, at Olympia, the Isthmus, Nemea, and Delphi, as long as the four sacred games continued—was invariably the same throughout Greece[8]. This indeed is strongly confirmed by many stadia still extant in Greece; and hence undoubtedly arose, in the progress of Greek civilization, the general use, as a linear measure, of this multiple of the natural measures taken from the human body, which were the earliest in all countries. As the stade could not have been introduced into common use as a measure, until long after the establishment of the sacred games, we are not surprised to find, even so late as the time of Herodotus, traces of the earlier custom of describing distances in the ὀργυιὰ, or fathom, the longest of the Greek measures before the stade was introduced.

These observations refer chiefly to European Hellas. We have no information as to the gymnastic and agonistic customs of the Greek cities of Asia prior to the Roman, or at least to the Mace-

[8] It requires better evidence than the tale related by Aulus Gellius (I. 1) on the pretended authorities of Plutarch and Pythagoras, and which seems to have been invented in illustration of the proverb, "ex pede Herculem," to prove that the Olympic stadium was really larger than the others; for, had the foot of Hercules been only one inch longer than that of other men, it would have made a difference of 50 feet in the curriculum of the stadium.

donian conquest—or even whether there were at an earlier time any stadia in the Asiatic Greek cities for those purposes, which had such a powerful influence on the manners and character of the people of European Greece. To this side of the Ægæan, at least, the great games which maintained the integrity of the European Greek stade were confined, until, on the other side, Persia had yielded to Macedonia.

The only clear indication which ancient history affords of a difference of standard between the Asiatic and European Greek foot is found in Herodotus, who remarks that the Egyptian cubit was equal to the Samian[9]. Now the medium of four Memphite cubits found in Egypt, and very slightly differing, is $20\frac{6}{10}$ English inches[1]. The Samian foot, therefore, was $13\frac{3}{4}$ English inches. Again, Herodotus remarks that the royal cubit of Assyria was three digits, or one-eighth, greater than the πῆχυς μέτριος[2], or ordinary cubit of a Greek foot and a half, and equal consequently to 20·482 English inches, differing very slightly from the Memphite cubit. Pliny states that the Babylonian foot was three digits longer than the Roman[3]. A stade composed of 400 Memphite or Assyrian cubits would have been about 685 English feet. Heron of Alexandria, a writer of the fifth century of our era, who has supplied us with a table of Greek measures of his own time, together with others which he calls

[9] Herodot. 2, 168.

[1] Jomard, Lettre à Remusat sur une nouvelle mesure de coudée, 4to., Paris, 1807.

[2] Herodot. 1, 178.

[3] Plin. H. N. 6, 26 (30).

ancient, places among the latter the Philetærian stade, formed of 600 Philetærian or royal feet, which bore to the Roman the proportion of 6 to 5[4], according to which the Philetærian foot was 13·9 inches. The name Philetærian is synonymous with Pergamenian, and Pergamus having been the most illustrious and powerful city in Asia during four or five centuries[5], it was there, probably, that the standard of the Asiatic foot was most carefully preserved. So small, however, is the difference in the length of 600 feet, resulting from the evidence of Herodotus, Pliny, and Heron, that we may safely infer that the standard of the foot was originally the same in Egypt, Phœnicia, Assyria, and Asia Minor: its adoption in Samus serving only as a proof among many others that the civilization of Asiatic Greece was derived from the East—differing in this respect from the progress of improvement in European Greece, where we find not only a different measure of the foot, but a different monetary standard of weight[6]. It is not impossible therefore that under the Macedonian monarchies of Egypt and Asia, stadia may have been constructed 600 Asiatic feet in length. In Asia Minor at least there is some

[4] Excerpta ex Herone Geometra de Mensuris—ap. Analecta Græca I. p. 313. Paris, 4to. 1688.

[5] "Longè clarissimum Asiæ Pergamum;" the acquisition of which, says Pliny, more affected the manners of Rome than that of any other Greek city, as the Pergamenians were equally renowned for their libraries and their cock-fighting. In the time of Pliny Pergamus was the centre of an extensive jurisdiction. Plin. H. N. 10, 21 (25).

[6] On this subject see Numismata Hellenica, Appendix, Note on the Weight of Greek Coins.

reason to believe that this was really the case, as stadia still exist in that country, at Aphrodisias and Laodiceia, of which it is difficult to conceive that the curriculum was not considerably longer than in the stadia of Greece Proper.

Taking the French measurement of the perimeter of the globe, upon which the length of their metre was founded, and which gives 364,538 English feet to the degree, the stade of 600 Greek feet was a little more than the 600th part of a degree, and the Asiatic about the 529th. But the hypothesis of the celebrated French geographers requires a much greater variety of stades. D'Anville annexed to the Map of his Ancient Atlas the scales of four different stades: the Aristotelian of about 1110 to the degree;—a stade of 60 to the Egyptian schœnus, differing not greatly from the former;—the Olympic of 8 to the Roman mile;—and a nautical stade of 10 to the same mile. Romé de l'Isle imagined 8, and Gosselin 9 different kinds of stade, derived from various ancient computations of the perimeter of the globe in stades; these were 400,000, 360,000, 300,000, 270,000, 252,000, 240,000, 225,000, 216,000, 180,000; giving respectively to the degree of latitude the following number of stades, $1111\frac{1}{9}$, 1000, $833\frac{1}{3}$, 750, 700, $666\frac{2}{3}$, 625, 600, 500[7]. The whole principle of this hypothesis is comprehended in the words of Jomard: "Le module diffère, l'unité est la même[8];" that is

[7] Gosselin, Géographie de Strabon, tome i. p. 1, seq.; tome v. p. 500, seq.

[8] Mém. sur le Système Métrique des Anciens Egyptiens. Description de l'Egypte, vii. 8vo. p. 183.

to say, it was imagined that an unknown people of the highest skill in astronomy and geography had made a true measurement of the perimeter of the globe; that the Greek geographers had expressed it in stades of different lengths; that from the proportion of the several computations of the perimeter to each other, the rate of each kind of stade to the degree may be recovered; and that by the application of some one of them, many of the distances mentioned by ancient authors, which are apparently incongruous and false, may be reconciled with the truth. In this manner the ancients will undoubtedly appear to have made a much greater progress in accurate geography than can otherwise be imagined. There is strong reason to believe, however, that their conflicting estimates of the circumference of the globe had a very different origin.

The most ancient computation of the perimeter appears to have been that of 400,000 stades[9], and to have been adopted by Thales and Anaximander. By what method this estimate was obtained we have no positive evidence; but we may presume that the ancient mathematicians alluded to by Aristotle proceeded in the same manner as Eratosthenes, by endeavouring to compare the terrestrial distance between two places, situated under the same meridian, with their interval in parts of the great circle, this being in fact the only mode of connecting geometry with astronomy. The ancients had never any better means of obtaining the proportion of the arc to the whole circle, than by

[9] Aristot. de Cœlo, 2, 14.

observing the proportion between the length of the gnomon and its shadow: but in this manner, as the instruments which they employed were rendered more perfect, differences of latitude may have been ascertained with an increasing approach to accuracy.* The terrestrial measurement was of greater uncertainty: indeed the difficulty which modern experience has shown to attend this simple operation, so as to render it worthy of confidence as a basis of geometrical calculation, is alone sufficient to account for all the discordant results of the ancient attempts to measure an arc of the meridian.

The method by which Eratosthenes obtained the perimeter of the globe in stades is recorded by Cleomedes[1]. Having assumed Syene to have been on the extreme limit of the tropical line, where the gnomon gives no shadow on the longest day, and Alexandria to be under the same meridian as Syene at a distance of 5000 stades, Eratosthenes observed, and with a near approach to the truth, that at Alexandria the gnomon on the longest day covered one-fiftieth part of the circle. Five thousand stades, therefore, he inferred to be the fiftieth part of the circumference of the globe, and 250,000 stades to be its perimeter. To this number he added 2000, in correction probably of the assumed difference of latitude, or of the assumed number of stades in terrestrial distance.

In another calculation mentioned by Cleomedes, but without naming its author, the distance between Syene and Lysimachia in the Thracian Chersonesus,

[1] Cleomed. Meteor. 1, 10.

was assumed to be a fifteenth part of the circle, and their terrestrial distance to be 20,000 stades, giving for the entire circle 300,000 stades. This measurement is no otherwise deserving of attention, than as having been adopted by Archimedes[2], for the difference of latitude between the two places, instead of being a fifteenth, was little more than the twenty-second part of the great circle. Another attempt to estimate the circumference of the earth was made, about a century after the time of Eratosthenes, by Posidonius, who, employing the same kind of process as Eratosthenes, determined the perimeter to have been 240,000 stades[3], which gives a rate of $666\frac{2}{3}$ stades to the degree; but afterwards reduced that number to three-fourths or 180,000, which gives 500 stades to the degree[4]. The arc of the meridian employed by him was that between Rhodes and Alexandria; which places he, as well as Eratosthenes, erroneously believed to be under the same meridian, at a distance which he reckoned at first 5000 stades, but afterwards reduced to 3750, and consequently the perimeter in the same proportion, namely of 4 to 3. This number 3750, however, Posidonius derived from Eratosthenes himself, who having obtained the difference of latitude between Alexandria and Rhodes by gnomonic observation[5], had converted it into stades at the rate which he had obtained in Egypt

[2] Archimed. in Arenar. p. 277.

[3] Ap. Cleomed. Meteor. 1, 10. [4] Strab. p. 95.

[5] *αὐτὸς δὲ διὰ τῶν σκιοθηρικῶν γνωμόνων ἀνευρεῖν τρισχιλίους ἑπτακοσίους πεντήκοντα.* Eratosth. ap. Strabon, p. 126. Pliny also says, H. N. 5, 31 (36), "Rhodos distat ab Alexandriâ

from a comparison of 5000 stades with the difference of latitude between Syene and Alexandria. Both these computations of Posidonius, therefore, were nothing better than unsuccessful endeavours to improve upon Eratosthenes [6].

All the geographers of later date, or at least until the second century of our era, were satisfied with the computation of Eratosthenes, which had the merit of proceeding on a correct assumption of the difference of latitude. Pliny speaks of it in terms which show that it still maintained its authority in his time [7]. It could hardly have been regarded, however, by the Greeks themselves, as any thing better than an approximation; since, when the division of the circle into 360 degrees came into common use, which had already occurred in the time of Hipparchus [8], 2000 stades were added to

Ægypti, ut Eratosthenes tradit, ccccIxix M. P." Which, according to the proportion invariably observed by Pliny between the stade and the mile, was 3752 stades.

[6] There were other reports of the distance between Alexandria and Rhodes. Isidorus made it 578 M. P., or 4624 stades; and Mucianus 500 M. P., or 4000 stades (Plin. 1, 1). Nothing can better show the uncertainty of ancient geography than such disagreements regarding one of the most important lines in the ancient maps, and which the geographers could not have failed to have agreed upon, at least within a much smaller difference, if the ancients had possessed even any such rough mode of calculating the run of a ship as the modern log. It is curious that all the ancient computations are wide of the proportion required by the stade of 600 Greek feet, or 600 stades to the degree. By this measure the true distance between Alexandria and Rhodes is about 3300 stades.

[7] "Improbum ausum, verùm ita subtili argumentatione comprehensum ut pudeat non credere," H. N. 2, 108 (112).

[8] It appears that this mode of dividing the circle was intro-

the 252,000 of Eratosthenes, for the sake of obtaining a rate in even numbers of 700 stades to the degree. Some other geographer imagined a perimeter by which he obtained a degree of 720 stades, or 12 stades to the minute, which he may have found a still more convenient instrument of calculation.

As the distance between Alexandria and Rhodes, computed by Eratosthenes, was nothing more than an inference from his Egyptian calculation of the perimeter, it follows that the correctness of them both, as well as the rate of 700 stades to the degree, which was deduced from that measure of the perimeter, depended almost entirely upon the truth of the 5000 stades assumed by Eratosthenes as the direct distance between Syene and Alexandria; for as to his mistaken supposition that the two places were under the same meridian, the error arising from it is scarcely to be regarded, if the distance itself be uncertain. Egypt, the reputed parent of geometry, was, above all the countries of the ancient world, that in which we may conceive the existence of maps, from which Eratosthenes may have obtained this important datum[9]. Nothing,

duced among the Greeks in the time of the Ptolemies, which favours the opinion that it was Egyptian, and derived from the number of days in the most ancient year of that people. (Strab. p. 81.—Diodor. 1, 50.)

[9] Strabo, p. 787. It was the opinion of Freret (Acad. des Insc. xxiv. p. 510) and of Gosselin (Géographie de Strabon, v. p. 314, note 1) that the accurate subdivision of the Egyptian soil, and the measurements repeated after every inundation, had the effect of supplying the Egyptians with the exact dimensions of their country, within a cubit. But however correctly

however, in proof of such a proficiency in practical geography has yet been found among those monuments, which have given us an insight into almost every part of the customs and social life of the Egyptians; and as they show, when compared with the books of Herodotus relating to Egypt, that the information which he collected in that country was extremely imperfect, we may presume, if not that the Egyptians were never possessed of correct maps of their own country, that the Greeks at least had not been able to avail themselves of that knowledge [1].

As the ancients had no portable instrument for measuring the portions of a day, and consequently could not easily ascertain the rate of travelling by the hour, a day's journey was their most exact measure of distance, both by sea and land, even as late as the time of Ptolemy the geographer, though comparatively few distances thus reported have reached us, because ancient geographers and historians, aiming at greater precision, have converted the days into stades, and by reporting these,

the lands of each nome may have been measured, the combination of the whole into a correct map was almost impossible without trigonometry.

[1] Strabo remarks (p. 806) that the Egyptian priests, whom he styles barbarians, resisted all the efforts of Plato and Eudoxus during a long residence at Heliopolis to obtain a full communication of their knowledge, one important particular in which was the exact length of the Solar year. But to keep science to themselves was one of the great principles of the priestly government of the Pharaohs. Hence their preservation of the most ancient form of writing, while an easier mode was in use among the people; and hence the mystifications exercised upon Herodotus and Plato. It is probable, also, that after the Persian Conquest science among the priesthood gradually declined.

without mentioning the number of days, have generally given us, instead of a fact, the result of an uncertain calculation.

It was naturally in the eastern basin of the Mediterranean, and around Crete, where the naval experience of the Greeks commenced, that they first attained a knowledge of distances approaching to correctness. Homer reports that the Cretans sailed in five days to Egypt[2] with a north wind. The rate derived from this number of days is a rate agreeing with the usual estimate in a later age of the progress of a Greek ship in favourable weather. This was about 35 geographical miles[3], to which about 25 may be added for the progress by night, thus making a total of 60 in the twenty-four hours.

Herodotus has left us a remarkable example of the superior accuracy of the rudest measurement to any computation in stades in his description of the dimensions of the Pontus or Black Sea. The length of the navigation of this sea, from the Bosphorus to the Phasis, he states to have been, in time, nine days and eight nights[4]. This, when measured by the Homeric rate of the Cretan ships, is in just proportion to the reality: but when Herodotus converts his summer day's sail into seven hundred stades, and night's sail into six hundred[5], making a total in the twenty-four hours of thirteen hundred stades, or more than double the Homeric rate, we are under the necessity of inferring, either an extreme exaggeration in the

[2] Od. ξ. 457.

[3] Rennell, Geography of Herodotus, p. 678.

[4] Herodot. iv. 86.

[5] Id. iv. 85.

number of stades, or that by these stades he intended a measure of less than half the length of the Greek stade. It is evident, however, that his estimate of a day's or night's sail in the Pontus is nothing more than an extravagant conjecture of his own, caused probably by his exaggerated idea of the magnitude of this, which he describes as the most wonderful of all seas (πελαγέων ἁπάντων θαυμασιώτατος); for admitting, contrary to all probability, that in other parts of his work he may not always have employed the stade, which, without the smallest hint of the existence of any other, he has defined as consisting of six hundred Greek feet, it is still impossible to suppose that he could in the same breath have intended two different measures, without distinguishing them. And yet this supposition would be necessary, since in the same passage in which he describes the length of the Pontus in a number of stades, giving a rate of twelve or thirteen hundred to the degree, we find that the length and breadth of the Bosphorus and Hellespont, places intimately known to the Greeks, and which the eye could measure, are accurately stated by him in stades of six hundred Greek feet: namely, the Bosphorus as one hundred and twenty stades long and four broad (of course in the narrowest part), and the Hellespont as four hundred stades long and seven broad. It is clear, therefore, that in this instance Herodotus allowed an excessive number of stades to the day's sail on the less frequented route, and accurately estimated the measure of the known places. In like manner, the length of the Propontis, which was better known in the time of Herodotus

than the Pontus, but not so well as the Bosphorus and Hellespont, he states to have been 1400 stades, which gives a rate of about 800 stades to the degree, or two-thirds of that which results from his length of the Pontus, and intermediate between the latter and that of the Bosphorus. Thus also in the unexplored coasts of the Persian Gulf and Indian Ocean we may remark that the stades of Nearchus are as short as those of Herodotus in the Pontus, until he obtains a pilot, and better weather, after which the day's sail gives a longer stade[6].

By a similar effect we find that, in all those parts of the ancient world which were best known to the Greeks, the rate of seven hundred stades to the degree is, in general, that most applicable to their reported distances. These, however, were direct lines, reduced from itinerary computations, and we know by modern experience how generally it happens in such cases, that the diminution is insufficient: we may conclude, therefore, that in truth no other than the stade of 600 Greek feet was intended by the ancient computers. The more frequented the route, the more populous the country through which it passed, the more civilized and lettered the people, the more nearly we find the reported distance to approach that standard of the stade. Thus, according to Herodotus, the road distance from Athens to Olympia was 1435 stades[7],

[6] Vincent's Commerce and Navigation of the Ancients in the Indian Ocean, i. p. 229.

[7] Herodot. ii. 7. Herodotus here states that the distance of Athens from Olympia was 15 stades less than that from the sea to Heliopolis in Egypt, which is totally incorrect, as the distance

giving a rate of 12 stades to the geographical mile, when measured with intervals of three geographical miles in the compasses along the course of the road. The road distance from Ephesus to Sardes, according to the same historian, was 540 stades[8], which, when measured on the map in the same manner, gives a rate of 10·8 stades to the geographical mile. But this difference of rate may be accounted for by the circuitous nature of the former route; by its having crossed several ridges of mountains, and partly perhaps because, in the time of Herodotus, it may have been less correctly known than that from Ephesus to Sardes. There can be no question, therefore, that in both instances the historian intended the same stade, which he has elsewhere defined as consisting of 600 Greek feet.

The same result is produced on a much longer line of road, that from Sardes to Susa, the road distance between these places, 13,500 stades[9], giving, when measured on the modern map along the course of the road, a rate of about 13 stades to the geographical mile. And this may be considered as one of the most authentic road distances in the ancient world, the road having undergone a kind of measurement, for it had been divided into σταθμοι, or stations, resembling the Roman *mansiones*, at which buildings were erected for the convenience of travellers; it appears even

of Heliopolis is not so much as three-fourths of that from Athens to Olympia. So confident he appears to have been in his accuracy that he mentions the exact points at Athens and Olympia, which were the termini of his measurement.

[8] Herodot. v. 54. [9] Id. v. 52.

that the intervals between the stations had been computed with some care, since, as we learn from Herodotus, who has entered into details regarding this road, the stations were not always at equal distances, having doubtless been fixed at longer or shorter intervals, as the nature of the country required. The truth of his description is confirmed by the near approach to correctness in the proportions of the different parts to the entire route, when measured on the modern map, and proves, upon the whole, that in this remarkable instance the stade of 600 Greek feet was certainly intended by the historian [1].

Herodotus is the earliest writer extant who computes distances in stades. As he travelled from one end of Egypt to the other, it is curious to examine the degree of proximity to the truth to which his computations led him. He began by making a most erroneous calculation of the distance of Heliopolis from the Mediterranean, which, instead of being 1500, is not more than 900 stades distant from the sea by the road. He informs us that from Heliopolis to Thebes there was an ἀνάπλους or ascending navigation of nine days, and an ὁδὸς or land-road of 4860 stades. The nine days of navigation were probably the result of his own experience, the

[1] This valuable passage is defective in one place, and there is an evident loss of some words, the number of stations in the Matiene being too small, and the parasangs being entirely omitted; which renders it impossible to compare the proportions of this part of the route with the map. Delabarre has ingeniously supplied some words which would make the passage complete and consistent. Mém. de l'Acad. des Inscriptions, viii. p. 341.

river being the ordinary route of all travellers in Egypt. Measuring the road along the valley of the Nile from Heliopolis to Farshiût, and from thence across the desert to Thebes on my own map, which is on a scale of a little more than 6 inches to a degree, I find, with an interval of three miles in the compasses along the road, a total distance of 330 geographical miles, giving a rate of 15 stades to the mile. From Thebes to Syene Herodotus makes the distance 1800 stades. The distance by the road is 115 geographical miles, which produces nearly the same rate of 15 stades to the mile. Three or four centuries after the time of Herodotus, when the Nile had become one of the most frequented and best known roads in the ancient world, the distance from the Mediterranean to Syene, which Herodotus had reckoned at upwards of 8000 stades, was computed by Aristocreon to be no more than 6000[2]; and this computation agrees perfectly in proportion with that of Artemidorus, who, according to Pliny, reckoned the distance from the head of the Delta to Syene to have been 600 Roman miles or 4800 stades, and equal to that from Syene to Meroë[3], which equality is confirmed by modern observation. About 150 years after the time of Artemidorus, when Egypt had been traversed by Roman armies, we find the distance from Alexandria to Elephantine or Syene estimated by Pliny at 580 Roman miles[4], but that seems below the truth when compared with the 530 geographical

[2] ap. Plin. H. N. 5, 9 (10).

[3] Artemidor. ap. Plin. 6, 29 (34).

[4] "Elephantis insula navigationis Ægyptiæ finis ab Alexandriâ

miles, which is the result of a measurement on the map of the road between those two cities, with an opening of 3 geographical miles in the compasses, and which must be nearly correct, as the length of the arc of the great circle between those two points is 453 minutes or geographical miles, to which a fifth or little less must be added to bring that length of the arc into road distance, thus making a result of 543 geographical miles. It appears, therefore, that Eratosthenes, in fixing the length of the arc at 5000 stades, was 470 beyond the truth: this excess we may suppose to have been partly caused by an error of computation, arising from the imperfection of his gnomonic observation, and partly by his wish to obtain a round number for future calculation.

When the pacification of the world under Augustus gave a degree of security to the countries forming the Roman empire which they had never before enjoyed, the paths of commerce and social communication became more frequented, and the distances of places more correctly known. We find accordingly that all those reported in stades by the most trustworthy authorities of the first and second centuries of our era favour the belief that they intended no other than the true stade of 600 to the degree. In the Black Sea, in place of the exaggerated estimate of Herodotus, we now find that its diameter from Byzantium to Panticapæum (from Constantinople to Kertsh), as well as the medium of four or five different computations of its circumference as reported by Pliny, give a rate not much greater than

DLXXX m. pass. In tantum erravere suprascripti (Artemidorus, Juba, Aristocreon)." Plin. H. N. 3, 9 (10).

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600 to the degree. And if we refer to Pausanias, who, from his diligence and the nature of his pursuits, is more worthy than any other author of being consulted on this question, it will appear that, although some of his numerous distances are doubtless incorrect, either by the fault of the author or his transcribers, they are evidently in general calculated in the same stade which six centuries before his time was defined by Herodotus as consisting of 600 Greek feet, and which generally produces a rate of 10 stades to the geographical mile in short, and of 12 or 13 in long distances. Of the latter there are not many in Pausanias, but I may refer to that from Sparta to Olympia as being one of the most likely to have been measured and well known. These two places he states to have been 660 stades distant by the road, which gives a rate to the geographical mile on the line of road of $12\frac{1}{2}$ stades, the direct distance being 53 geographical miles. Another proof that the Attic standard of the foot, and consequently of the stade, was uniform in Greece Proper and its colonies, even at a late period, is afforded by Hyginus, who informs us that the Cyrenaic foot bore to the Roman the proportion of 25 to 24[5], being exactly the same as that of the Attic foot to the Roman.

If the origin and real nature of the varying calculations of the circumference of the earth were such as I have endeavoured to prove, it is obvious that the stades of different lengths deduced from them are quite visionary. It would be superfluous, there-

[5] Hyginus de limitibus constituendis, ap. rei agrariæ Scriptores, Goes. p. 210.

fore, to enter into any detailed exposition of the system which endeavours to reconcile ancient computations of distance with the truth, by applying to them, according to the necessity of the case, stades of $1111\frac{1}{9}$, or of $883\frac{1}{3}$, or of $666\frac{2}{3}$, or of 500, or any other proportion to the degree; a system which has been carried so far that the same ancient writer has been supposed to have reported the length of a country in one kind of stade, and the breadth in another. Even if such an hypothesis were well founded it would prove too much. Correctness in distances, or even in proportions of distance between the principal points of a map, the most simple and certain test of its truth, could not possibly have been attained by the ancients, unaided as they were by the compass or by observations of longitude. In fact, when we come to examine their geographical proficiency, we find it in exact proportion to the poverty of their geometrical means.

In the eastern portion of the Mediterranean, and the countries around it, their information, as before hinted, more nearly approached the truth than in any other part of the world. Eratosthenes knew that the general direction of the valley of Egypt, when produced, would describe that of the western coast of Asia Minor[6]: he knew that Mesopotamia was shaped like a boat[7], and he was better acquainted than we have been, until recently, with the course of the Nile through Nubia[8].

The degree of accuracy, however, to be attributed

[6] Eratosth. ap. Strabon. p. 114. [7] Id. ibid. p. 79, 80.

[8] Id. ibid. p. 786. The remarkable bend of the Nile in Nubia here described by Eratosthenes was first verified in mo-

to his positions in general may be estimated by the points which he places in the same latitude with Rhodes, on the line which a century before his time, and much more anciently, had been assumed as the διάφραγμα τῆς οἰκουμένης or central line in the length of the inhabited world[1]: these points were the Columns of Hercules or Straits of Gibraltar, the Sicilian Straits, Capes Tænarus and Sunium in Greece, and Issus, in the north-eastern angle of the Mediterranean[2]. Of these, Sunium is $1\frac{1}{2}°$ and the Sicilian Straits 2° to the north of the latitude of Rhodes. On the central meridian, or that which at Rhodes cuts the diaphragma at right angles, he placed Meroë, Syene, Alexandria, the Hellespont, and the mouth of the Borysthenes[3], not one of which is on the same meridian as Rhodes, and the last very wide of it. As well as Hipparchus he followed Pytheas in placing Massilia and Byzantium in the same latitude[4], and he imagined Carthage, the Sicilian Straits, and Rome to have been under one and the same meridian[5]. The distance between Sicily and the Peloponnesus he made equal to that between Sicily and the Straits of Gibraltar[6]; and the breadth of Northern Greece from Dyrrhachium to Thessalonica between a third and a fourth

dern times by the information procured by Burckhardt. See his Travels in Nubia, p. 451.

[1] Dicæarch. ap. Agathem. Geogr. I. 1, p. 4, in Geogr. Gr. Min. Hudson, II.

[2] Eratosth. ap. Strab. p. 67. [3] Id. ibid. p. 62.

[4] ap. Strab. p. 63, 71, 115. [5] Eratosth. ap. Strab. p. 93.

[6] See Gosselin, Géog. des Grecs Anal. p. 14—20; and the map entitled Eratosthenis Systema Geographicum.

of that of Asia Minor[7], instead of a half. It was scarcely possible to expect any correct distances upon a map so constructed, unless by the effect of a compensation of errors; and accordingly we find that such a compensation had considerable effect in causing the length of the Mediterranean to approach its true proportion: for, the coast of Asia Minor between Rhodes and Issus having been tolerably well known to navigators, the excess of distance between Rhodes and Sicily counterbalanced in great measure the defect of that between the Sicilian and Iberian Straits, so that the whole length of the Mediterranean, when measured by the stade of 700 to the degree, is found to be not more than a sixth or a fifth below the 30,000 stades, or thereabouts, which Eratosthenes ascribed to it[8]. Gosselin, however, viewed this measure of the Mediterranean in a very different light, both in itself and as a portion of the entire line from the Sacred Cape to the mouth of the Ganges. Finding that the true interval between the two extreme points is 100° of longitude, and that 70,000 stades, the length attributed to the entire line by Eratosthenes, gives exactly his rate of 700 stades to the degree, Gosselin concluded that such a coincidence could only have arisen from a true map, on which the degrees of longitude had been marked without any distinction of their diminished breadth, and that from these Eratosthenes had deduced his distances, ignorantly converting them into stades of 700 to the degree of

[7] Eratosth. ap. Strab. p. 68, 106.

[8] Eratosth. ap. Strabon. p. 87.—See Gosselin, Géogr. des Grecs Anal. p. 12, et seq.

latitude. In this opinion Gosselin was confirmed by observing that the distance given by Eratosthenes between the Sacred Cape and Issus, when reduced in the proportion of the length of a degree of longitude, in the latitude of Rhodes, would give accurately the length of the Mediterranean, to within a few miles[9]; and the result appeared the more wonderful, as so late as the year 1768 the length of the Mediterranean was so little known that in the best modern maps it was made more than one-third greater than the reality. Combining this hypothesis therefore with the fact that Pytheas had some knowledge of a promontory, Calbium, which lay beyond the Sacred Cape of Iberia, and corresponded to Cape Finisterre of Brittany,—of an island, Baltia (Denmark or Scandinavia), which has given name to the Baltic Sea, and that he had even some idea of the position and extent of the British islands, and of the existence of Thule, places which Pytheas could not have visited in his pretended travels, Gosselin concluded that both Pytheas and Eratosthenes had had access to the memoirs of some unknown ancient people to whom Europe and its seas were as well known as it is to ourselves. He shows that this people could not have been the Babylonians, or the Phœnicians, or the Carthaginians, or the Egyptians; and Bailly, who in his History of Astronomy entertains a similar opinion, supposes them to have lived before the deluge[1].

The practical astronomy and the geometry of

[9] Gosselin, p. 41.

[1] Bailly, Hist. de l'Astron. Anc. I. 3.

the ancients having continued almost stationary after the age of Eratosthenes and Hipparchus, their subsequent progress in geography was little more than the result of the knowledge, gradually acquired, of all the countries which surrounded Rome as a centre. Without trigonometry, or any astronomical method of determining longitudes, the only means of approximating to a correct construction was by measurements and computations of distance, assisted by latitudes. Strabo and Pliny, by the numerous distances which they have given, have shown an unconscious acknowledgment of this principle; and it is only from those distances that we can estimate the proficiency of the men of their time in tabular geography, which had certainly made some progress in the third century before the Christian era, as Strabo refers to the map of Eratosthenes[2]. In the year 122 B.C. the Romans commenced a series of real measurements, by the erection of milestones on their roads[3], which, when it had been continued for two centuries on every great road of the empire, may, when checked by differences of latitude, have given them the means of forming an imperial map far more accurate in its general construction than had ever been in the power of the Greeks. The commission instituted at Rome by the great reformer of the calendar, in the year 44 B.C., and which for twenty-five years continued its active operations throughout the Roman world[4], under the inspection of Agrippa and patronage of Augustus, produced about the end of that time a

[2] Page 67. [3] Plutarch in C. Grac. 7.

[4] Æthic. Cosmog. præf.

great painting or map, which was displayed in the portico of Agrippa[5]. Strabo, however, who wrote about that time, appears to have derived little advantage from these geographical acquirements of the Romans. His work is extremely valuable with a view to history, and his extensive travels have afforded richer materials of comparative geography than any other ancient writer; from his criticisms of Eratosthenes and Hipparchus, rash and erroneous as they generally are, we derive principally our knowledge of the geographical attainments of those distinguished men. But he was himself very deficient in the mathematical science of his time, and instead of improving, like geographers in general, upon his predecessors, he appears even to have neglected the opportunity which a long residence at Alexandria[6] afforded him of acquiring as much as had long been known to that school. Of bearings and the relative positions of places and the forms of countries, his conceptions are often, for so extensive a traveller, surprisingly false, and can only be accounted for by his having had no capacity or taste for the scientific part of geography. His system of the οἰκουμένη, or inhabited earth, surrounded by one great sea, of which the Caspian was a gulf, like those of Arabia and Persia, was derived without improvement or correction from Eratosthenes, who had preceded him more than 200 years. The length of this inhabited earth, he agreed in supposing to be something more than double its breadth[7]; one of those unproved assumptions so detrimental to the

[5] Plin. H. N. 3, 2 (3). [6] Strab. p. 101.
[7] Ibid. p. 64.

progress of truth, into which the ancients were led by some favourite theories of proportion, and which Strabo, with all his reputed philosophy, seems never to have doubted, or thought of examining [8].

By placing Marseilles between three and four degrees to the south of Byzantium, instead of 2° 17′ to the north, which is its real position, Strabo threw all that zone of the ancient world into confusion. Even Britain was better known to Eratosthenes than to Strabo, who supposed the British Channel to extend from the mouth of the Rhine to the Pyrenees. Ireland he had heard of, but places it due north of Britain, a surprising ignorance, as its position was well known to his contemporary Agrippa, though the latter doubled its real dimensions [9]. One of the curious consequences of the false principles of Strabo was that he conceived the Pyrenees to have had a north and south direction, and that parallel to it were the courses of the Garonne, the Loire, the Seine, and the Rhine [1].

Pliny, who wrote thirty or forty years later than

[8] "It is confessed," he says, "by both ancients and moderns that the inhabited earth is twice as long as it is broad. Eratosthenes, therefore, having extended the breadth from Ierne to Thule, a portion uninhabitable on account of the cold, was obliged, in order to preserve the aforesaid proportion, to give an undue extent to its length from the western cape of Iberia to the eastern extremity of India." Strabo, p. 64.

[9] "(Britanniæ) longitudinem DCCC. M. P. esse, latitudinem CCC. M. credit (Agrippa). Eamdem Hiberniæ latitudinem, sed longitudinem CC. M. P. minorem. Super eam hæc sita abest brevissimo transitu a Silurum gente XXX. M. P." Plin. H. N. 4, 16. The equal breadth of England and Ireland is true about the latitude of Liverpool.

[1] Strabo, p. 115, 177, 190, 199.

Strabo, but who appears to have been unacquainted with his work, though he consulted almost every other Greek geographer known to us, had the advantage of drawing from all the sources of which the streams centred in Rome; where he had not neglected the portico of Agrippa, for he often cites that illustrious Roman, and sometimes dissents from his authority. Pliny has left us between 500 and 600 distances, which, when compared with those of Strabo, bear strong marks of geographical improvement; although, as might be expected in an inquiry which forms only a small part of the laborious researches of the author, it is necessary to reject a portion of those distances as manifestly faulty, either in consequence of defects of the text, or of original error. Visionary theory and a wish to discover proportions in the works of nature, still continued to obstruct the march of practical truth. In this form we have a specimen of the geographical ignorance of the Romans by the most learned writer of the most learned age of Rome as follows: "Europe appears to be greater than Asia by a little less than a half of Asia; and greater than Africa by the same quantity added to a sixth part of Africa. Europe is a third part of the whole earth with the addition of a little more than an eighth. Asia is a fourth *plus* a fourteenth, and Africa a fifth *plus* a sixtieth[2]."

Great accessions were made to geography during the century which elapsed between the dates of Pliny and Ptolemy, though still without any im-

[2] Plin. H. N. 6, 33 (38).

provement in the scientific means of methodizing those acquisitions. To the knowledge of their own country by the Greeks; to the discoveries produced by the conquests of Alexander; to the observations of his naval commanders and engineers; to the measurements of his σταθμοδοται and βηματισται; to the subsequent conquests of Seleucus Nicator and Antiochus Soter; to the military surveys, marches, and measured roads of the Romans, which had been accumulating during four or five centuries of conquest and dominion, were now added the effects of commerce and social communication during two centuries of peace and prosperity. The consequent acquisitions to geography are sufficiently evident from the work of Ptolemy, particularly from the parts of it relating to those countries which had hitherto been the least known to geographers, such as Africa, the northern parts of Asia and Europe, and particularly the British islands. These had already, as Pliny remarks, been made known, during thirty years before his time of writing, by the Roman commanders; and it is doubtless to this source of information, added to the growing intercourse between Rome and the British islands between the times of Pliny and Ptolemy, and not to any Carthaginian or Phœnician materials obtained by Ptolemy (as Irish antiquaries delight in persuading themselves), that we are to attribute his knowledge of Ireland, and of some existing names, such as the river Ovoca and the city Eblana[3].

[3] As many additions were made to the work of Ptolemy long after his time, the Irish chapter may not have escaped this kind

A preference of system to the collection of facts —that besetting vice of philosophers of all ages and in every branch of science—continued, however, to distinguish the Greeks to the latest period of geographical improvement; and hence Ptolemy, instead of obtaining for geography the advantages which might have been derived from a selection and verification of distances, and from a combination of them upon sound principles, applied the whole of his collected information to a system, which was founded in ignorance and error. The method which he followed had been long before recommended by Posidonius and Hipparchus, and doubtless it is the most scientific; but as very little improvement had been made in astronomical geography since the time of Thales, we are not surprised that Ptolemy failed in a system which is adapted only to geography in its most advanced state, and which consequently had the effect of misleading himself, as well as those who relied upon his authority. Like geographers in general, he converted the labours of his immediate predecessor to his own use, and endeavoured to improve upon them. But in blaming that predecessor, Marinus of Tyre, for having separated facts from systematic arrangement, he leaves on us the impression that it might perhaps have been better for us to have lost his tables of latitudes and longitudes

of alteration. Marinus says [ap. Ptolem. i. 11] "that Philemon reported the breadth of Ireland from east to west to be 20 days; but that Philemon derived this information not from his own observation, but from certain merchants, more intent probably upon their own affairs than on geographical inquiries." The 20 days of Philemon are about equal to the 300 M. P. of Agrippa.

than the work of Marinus, which, as he thus gives us reason to believe, contained, together with the development of his method, many important facts and simple results of experience not yet tortured into an erroneous system. The latitudes of Ptolemy are too often wide of the truth, to allow us to believe that they were often derived from gnomonic observation; as well as the longitudes, therefore, they were for the most part calculated from distances, very few of which had been measured. And hence in general it may be said, that, excepting the information often derived as to the relative situation of places by means of the differences in latitude or longitude, the utility of the work of Ptolemy consists mainly in its catalogue of ancient names chorographically arranged.

The great errors of Marinus and Ptolemy appear to have arisen chiefly from the want of instruments for the correct observation of time, whence, although they understood how to deduce differences of longitude from eclipses and other celestial phenomena, they were scarcely ever able to obtain observations of that kind with sufficient precision for geographical purposes, but on the contrary appear often to have been misled by them into a confirmation of errors in excess, originating in itineraries not sufficiently reduced into direct distance. Ptolemy himself was well aware of the prevalence of the latter cause of error, and has unconsciously given a remarkable instance of the former in his difference of longitude between Arbela and Carthage, which he has placed at an interval of 45° of longitude, because an eclipse of the moon was reported to have

happened three hours earlier at the former than at the latter[4]. The real difference, however, is not more than 33°, so that the observers or reporters of the observation made an error in excess of forty-eight minutes of time. Instead of about 75° of longitude between Cape St. Vincent and the mouth of the Indus, Ptolemy allows 110°[5]; and as a portion of this enormous error, he makes the distance from the same promontory to Issus 67° instead of 41°[6]. The interval in stades had at the same time, in the progress of practical experience, been approaching to the truth; the 30,000 stades of Eratosthenes having been reduced by Agrippa to 27,600[7]. This number, indeed, still exceeded the true distance by five or six thousand stades of 600 Greek feet; but such an excess might easily occur in the computation of a distance which the ancients had no means of correctly measuring, and which, in fact, was nearer to the truth by a half than that which the moderns, with all their advantages, had obtained seventy or eighty years ago[8]. It appears, therefore, that Marinus, trusting to his differences of longitude in hours or degrees, was under the necessity of rejecting either the received computation of the length of the Mediterranean, or the rate of 700 stades to the degree, and that he chose to accept the latter, accommodating the length of the Mediterranean in stades to his degrees of longitude, by supposing a

[4] Ptolem. i. 4.
[5] Ptolem. ii. 5; vii. 1.
[6] Ibid. i. 12; ii. 5; v. 8.
[7] Plin. H. N. 6, 32 (38).
[8] Gosselin remarks, that in the year 1768 the maps of Samson, the best then known, gave a length of the Mediterranean more than a third greater than the reality.

rate of 500 stades to the degree of latitude, and of 400 to the degree of longitude in the parallel of Rhodes; for the latter multiplied by 67 will give 26,800 stades for that distance, differing only 800 stades from the computation of Agrippa.

That such was the process of Marinus, followed by Ptolemy, and not a blind adoption of the second computation of Posidonius, which equally gave a rate of 500 stades to the degree of latitude, seems evident from the fact that Ptolemy was aware of the error of Posidonius, as well as of Eratosthenes, in placing Alexandria and Rhodes on the same meridian; for the tables of Ptolemy mark a difference of 2° 10′ in their longitude, being 26′ more than the true difference[9]. In reference to the main question, therefore, of the present memoir, that of the singleness of the stade, there is nothing adverse to that hypothesis in the proportion of the stade to the degree, as employed by Marinus and Ptolemy.

Notwithstanding the imperfection of the work of Ptolemy, it may be considered as the extreme limit to which ancient geography ever attained, and it continued to be the chief, or rather the only, guide of Greeks, Arabs, and every other people, until long after the revival of learning. The many additions and alterations, which the text evidently received in the course of transcription, cannot increase our confidence in a document which from its nature is of such questionable authority, and it is therefore seldom to be relied on, unless when confirmed or illustrated by collateral evidence.

[9] Ptolem. iv. 5; v. 2.

If we reject the variety of stades derived from the Greek computations of the perimeter of the earth, as void of any foundation in reality; if we consider that, from the time of Herodotus to the end of the second century of the Christian era, there is no direct testimony to the existence of any metrical stade of a different standard from that of 600 Greek feet; that Polybius, Strabo, Dionysius of Halicarnassus, Appian, Livy, Vitruvius, Columella, Pliny, Frontinus, Marcian of Heracleia, all confirm that measure by valuing the stade at one-eighth of the Roman mile, we cannot fail to conclude that historians and geographers constantly intended this stade, and no other, in their statements of distance, however erroneous may be the computations reported by them when referred to this measure. Is it possible that Eratosthenes, Posidonius, Hipparchus, Strabo, Pliny, Ptolemy, and Marcian of Heracleia, when examining and criticizing former measures, or endeavouring to discover the causes of the disagreement of authors in particular distances, should not have adverted to the variety of stades had it existed? Or were they ignorant of the fact? Gosselin, who believed in this ignorance, as well as in the existence of six different stades, might well exclaim, "Cette ignorance, que toute l'Ecole d'Alexandrie et tous les géographes de l'antiquité paroissent avoir partagée, est assurément une des choses les plus remarquables et plus étonnantes que puisse présenter l'histoire de la géographie ancienne[1]."

[1] Géogr. de Strabon, i. p. 182, note 1.

In Greece Proper the stade, as we have seen from Pausanias, retained its true length until the end of the second century, and probably as much longer as the maintenance of the Olympiads and of the four Sacred Games secured the preservation of its standard in the Stadium. In every other part of the Roman world, where reverence for Greek customs and the imitation of them were rapidly passing away, where the true standard of the stade was of little importance or interest, this neglect would naturally be followed by uncertainty as to its length. It is not surprising, therefore, to find that, in the course of the three following centuries, the mile is represented by some writers to have been equal to $7\frac{1}{2}$ stades, and by others to 10 stades[2], until at length it appears to have been applied to various measures of distance, without any reference to its origin[3].

The author of those times, who, by the general character of his work, lends the greatest weight to the belief of a real variety of stades, is Censorinus: he distinguishes three stades; namely, the Italic of 625 feet, the Olympic of 600 feet; and the Pythic

[2] Dion Cassius (52, 21) describes a distance known to have been 100 Roman miles as 750 stades, and this we find stated to have been the proportion of the stade to the mile by some of the grammarians (Suidas and Photius in Στάδιον. See also Julian of Ascalon ap. Harmenop. Promptuar. tit. 4). And yet the Jerusalem itinerary says, "Stadia mille quod facit millia centum" (Wesseling, p. 609); and a similar proportion may be deduced from the average rate of the peripli, or stadiasmi, when compared with the truth.

[3] See Mémoires de l'Académie des Inscriptions, iv. p. 292; xxxi. p. 295.

of 1000 feet[4]. As Censorinus makes no distinction between Roman and Greek feet, we are to infer, notwithstanding the Greek names, that Roman feet alone were intended by him; and this is confirmed by his Italic stade, which, having consisted of 625 feet, was evidently no other than the Greek stade in Roman feet. His Olympic, therefore, was the Roman stade of $8\frac{1}{3}$ to the Roman mile, or, in other words, a measure of 600 Roman feet; and the three can only be regarded, supposing Censorinus to have been correct, as Italian measures of the third century, to two of which the Romans had been pleased to attach Greek names, and to the third, or Italic, a name which may be described as the reverse of that really belonging to it, since it was, in fact, the Greek stade. Considering, indeed, the origin and use of the stade in Greece, and the evidence of the Stadia still extant, it is impossible to believe that any such measures as the Olympic and Pythic stades of Censorinus were ever employed in Greece. We may be assured, at least, that the Pythic stade was not taken from the Stadium of Delphi, which is still sufficiently preserved to show that it differed not in length from the other Stadia of Greece. It is possible, however, that 1000 feet may have been the length of the curriculum of the Pythic *Hippodrome*.

[4] "Nam et Eratosthenes geometricâ ratione collegit maximum terræ circuitum esse stadiorum CCLII. millium: ita Pythagoras quot stadia inter terram et singulas stellas essent indicavit. Stadium autem in hac mundi mensurâ id potissimum intelligendum est, quod Italicum vocant pedum DCXXV., nam sunt præterea longitudine discrepantia ut Olympicum quod est pedum DC., item Pythicum pedum CIↃ." Censorin. de die nat. 13.

With the extinction of paganism in Greece, or soon afterwards, the stade probably ceased to be employed, in that country, as a Greek measure. The use of the mile, like many Roman customs adopted by the Greeks, has continued to the present day, not, however, as a distance consisting of any determinate number of the still-existing national measures of feet, cubits, or fathoms (ποδάρια, πηχεῖς, ὀργυιαὶ), but merely as a computation, which, as common in such cases, has fallen below the real standard. The diminution began, probably, with the neglect of the Roman roads and the destruction of the milestones.

It may still remain due to the great name of Rennell to advert to the conclusion at which he arrived in examining this question, and which nearly concurred with that of Delabarre; namely, that there were two stades, the one of 600 Greek feet, the other considerably shorter[5]. Having observed that the distances given by eight different authors, of whom the oldest was Herodotus, and the latest Arrian, varied only a fourteenth in the length of the stade, as resulting from a comparison of those distances with the reality,—the longest being the 696th, the shortest the 750th part of a degree of the great circle,—Rennell justly thought that such a difference in computed distances might easily have been the result of inaccuracy. But observing, also, that all these rates were below that of 600 Greek feet to the degree, he inferred that, besides that measure which belonged to the stadium or place of gym-

[5] Geography of Herodotus, p. 15.

nastic exercise, there was a shorter measure for itinerary purposes, which he deduced from the medium of the several rates just alluded to, and reckoned at the rate of 718 to the degree, or about 500 Greek feet to the stade. He argued that, unless a much shorter stade than that of 600 Greek feet existed, it was impossible that marches of from 150 to 200 stades could have been customary, as they appear to have been, particularly from Xenophon. The distances of Xenophon, however, were not in stades, but in parasangs, a measure subject to no standard, though generally presumed to be equal to 30 stades, but varying in different countries, and as employed by different authors[6]. There is greater weight, therefore, in the remark of Rennell that, had a stade of 600 (Greek) feet been the standard, the examples of its application to itinerary distances would not have uniformly fallen short of it[7]. But to this again we may reply, that such an itinerary stade was either a measure of 500 Greek feet, or it consisted of 600 feet, at the rate of 10 inches English to the foot; both inadmissible suppositions: the first, because all evidence opposes the belief that the word stade was ever applied by the Greeks to any other number of their feet than 600; while, in the latter alternative, the 600th part of the measure would have been too short for any foot.

[6] "Inconstantiam mensuræ diversitas auctorum facit, cum Persæ quoque schœnos et parasangas, alii aliâ mensurâ determinent." Plin. H. N. 6, 26 (30).

[7] Geogr. of Herodotus, p. 32.

This itinerary stade, therefore, is a mere inference from a comparison of ancient computations with real distances, unsupported even by a nominal standard. Such a measure is a mere conjecture, a computed measure, varying with the knowledge and accuracy of the writer, or the skill, in the computation of distances, of himself or of those from whom his information was derived: it was less precise, in short, than the computed itinerary hours of modern orientals. It is not surprising that distances so reckoned should almost constantly have given a stade below the true standard. In like manner, we find that the numerous distances stated in Roman miles by Pliny, although preserving in general a more just proportion to one another than those reported by any other author, are, with the exception of such as are evidently erroneous, almost invariably above the reality. The same observation is applicable also, though naturally not in so great a degree, to the ancient documents which are strictly topographical, such as the itineraries, peripli, and stadiasmi; and it arose from the same cause, namely, that the far greatest proportion of distances inserted therein are not measurements, but computations. Hence those documents are full of original errors, as well as of such as have arisen from a repetition of copies in the course of ages. It happens, moreover, most unfortunately, that our itineraries of Roman roads, a complete and accurate collection of which would have supplied a series of true measurements on all the most important lines in the ancient world, are of a late date, and obviously incomplete as well as incorrect.

These and other preceding observations are not intended to support an opinion that the distances reported in ancient history are generally unworthy of the notice of the investigator of ancient geography. On the contrary, they furnish some of his most valuable materials: always, however, to be examined with suspicious criticism, and to be corroborated, if possible, by other testimony, but not to be adjusted by a varying scale of stades derived from a supposed measurement of the globe by some unknown ancient people: for if geology agrees with sacred history in showing that man has not long been an inhabitant of this planet, geographical inquiry tends equally to the persuasion that his goodly freehold has never yet been surveyed; though the present age has made great advances in this useful undertaking.

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